

Parametre nedir istatistik

Bu görüntü, bir küre üzerindeki parametre eğrilerini gösteriyor. Ancak, u sabit olduğunda bu eğriler tamamlanmamış durumda, bu nedenle bu eksik kısımların sanki kürenin arkasında devam ediyormuş gibi düşünülmesi gerekiyor. Parametre (Eski Yunancadan παρά para: "yanında", "karşın"; ve μέτρον, metron: "ölçmek") belirli bir sistemi tanımlamak veya sınıflandırmak icin vardımcı olabilecek herhangi bir özellik (bir etkinlik, proje, nesne, durum, vb.). Parametre, sistemi tanımlarken veya performansını, durumunu değerlendirirken vararlı veya kritik olan bir sistem unsurudur. disiplinlerde daha spesifik anlamlara sahiptir. Bu alanların içinde ve karşısında, parametrenin farklı kullanımlarının ve genellikle argüman, özellik, aksiyom, değişkenler tarafından belirlenen bir veya daha fazla argümana sahiptir. Bir işlev tanımında parametreler de olabilir, ancak değişkenlerin aksine parametreler, işlevin aldığı bağımsız değişkenler arasında listelenmez. Parametreler halihazırda, bir bütün fonksiyon f (x) = a x 2 + b x + c {\displaystyle $begin{aligned}(x) = ax^{2}+bx+c() end{aligned}}$ Burada, x değişkeni işlevin argümanını belirtir, ancak a, b ve c hangi belirli ikinci dereceden fonksiyonun değerlendirildiğini belirtmek için işlev adına bir parametre eklenebilir. Örneğin b tabanında bir logaritma, log b (x) = log (x) log (b) {\displaystyle \log {b}(x)={\frac {\log(x)}} Burada b, hangi logaritmik islevin kullanıldığını gösteren bir parametredir. Fonksiyonun bir argümanı değildir ve örnek türev olarak düşünülürse sabit olacaktır log b (x) {\displaystyle \textstyle \log {b}(x)}. Bazı resmi olmayan durumlarda, bir işlev tanımındaki sembollerin bir kısmının ya da tümünün parametreler olup olmadığı konvansiyon meselesidir. Bununla birlikte, sembollerin durumunun parametre ve değişken arasında değiştirilmesi fonksiyonu bir matematiksel nesne olarak değiştirir. Örneğin, düşen faktörel güç için gösterim n k = n (n - 1) (n - 2)… (n - k + 1) {\displaystyle n^{{\underline {k}}=n(n-1)(n-2)\cdots (n-k+1)}, (k parametre olarak düşünüldüğünde) n'nin bir polinom fonksiyonunu tanımlar, ancak k'nin bir polinom fonksiyonu değildir (n parametre olarak düşünülürse). İkinci durumların daha resmi gösterimi tipik olarak (bazen "parametreler" olarak adlandırılacak olanlar dahil olmak \hat{u} is a construction of the second seco fonksiyonların endeksli ailesi olarak düşünülmesi yararlıdır. Bir olasılık dağılımı gibi matematiksel model bağlamında, değişkenler ve parametreler arasındaki ayrım Bard tarafından aşağıdaki gibi tanımlanmıştır: Bir model olarak, belirli bir fiziksel durumu açıklayan ilişkilere atıfta bulunuruz. Tipik olarak, model bir veya daha fazla denklemden oluşur. Değişkenler ve parametreler sınıflandırdığımız denklemlerde görünen nicelikler arasındaki ayrım her zaman kesin bir kesim değişkenleridir. Genellikle model, bir deneyde bağımsız olarak ölçülebilen nicelikler arasındaki ayrım her zaman kesin bir kesim değişkenleridir. Bununla birlikte, bu ilişkileri formüle etmek için, doğanın kendine özgü özelliklerini (veya belirli bir deneyde kullanılan malzeme ve ekipman) gösteren "sabitler" sıklıkla ortaya konur. Analitik geometride eğriler genellikle bazı işlevlerin görüntüsü olarak verilir. Fonksiyonun argümanı daima "parametre" olarak adlandırılır. Başlangıç merkezli yarıçap 1 dairesi birden fazla formda tanımlanabilir: Tam Form x 2 + y 2 = 1 {\displaystyle $x^{2}=1$ Parametrik form (x, y) = (cos t, sin t) {\displaystyle $x^{2}=1$ Parametrik denklemler, pa bulunur ve bağımsız değişkenler parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametreye bağlı olan integraller düşünülür. Örnek olarak, F (t) = $\int x 0(t) x 1(t) f(x;t) dx$. {\displaystyle F(t)=\int $\{x_{0}(t)\}^{x_{1}(t)}f(x;t), dx$.} Bu formülde t, F' fonksiyonuun argümanı ve sağ tarafta, integralin dayandığı parametredir. İntegrali değerlendirirken t sabit tutulur ve bu nedenle bir parametre olarak kabul edilir. t'nin farklı değerleri için, F'nin alacağı değerleri için, F'nin alacağı değerle ilgileniyorsak; t'nin bir değişken veya entegrasyon değişkenidir (karışıklık yaratan, aynı zamanda bazen entegrasyon parametresi olarak da adlandırılır). İstatistik ve ekonometride, yukarıdaki olasılık çerçevesi hala geçerliliğini korur ancak, gözlemlenen verilere dayanan dağılım parametrelerinin tahmin edilmesine kaymaktadır. Klasik tahminlerde bu parametreler "sabit fakat bilinmiyor" olarak kabul edilir, ancak Bayes tahmininde rastgele değişken olarak ele alınır ve belirsizlikler bir dağılım olarak tanımlanır. İstatistik tahmin teorisinde, "istatistik" veya tahmin edici örnekleri, buna karşın "parametre" veya tahmin, örnekleri, buna karşın "parametre" veya tahmin i olarak kullanılabilen bir numunenin sayısal özelliğidir. Örneğin, X - {\displaystyle {\overline {X}}}, olarak belirtilen numune ortalaması (tahmini), numunenin alındığı popülasyonun µ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun σ2, olarak belirtilen örnek varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun σ2, olarak belirtilen örnek varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasyonun μ cinsinden ifade edilen varyansı, numunenin alındığı popülasy kullanılabilir. (Örnek standart sapmanın (S) popülasyonun standart sapmasına (σ) ilişkin tarafsız bir tahminde bulunmadığına dikkat edin. Bkz. Standart sapmanın tahmin edilmemiş tahmini.) Olasılık dağılımlarının belirli bir parametrik ailesini varsaymadan istatistiksel çıkarımlar yapmak mümkündür. Bu durumda, daha önce açıklanan parametrik istatistiklerin tersine, parametrik olmayan istatistiklerden bahsedilir. Örneğin, Spearman'ın sıralama korelasyon katsayısına dayanan bir test, istatistiğin, gerçek değerlerini dikkate almayan (ve böylece örneklendiği dağılımdan bağımsız olarak) verilerin sıralamadaki sıralamadaki sıralamatiklerden bahsedilir. Pearson'ın ürün-momenti korelasyon katsayısı parametreyi tahmin eder. Mühendislikte (özellikle veri toplama dahil olmak üzere) parametre, nadiren de olsa bireysel olarak ölçülen bir maddeyi belirtir. Bu kullanım tutarlı değildir, çünkü parametre terimi bu bağlantı hakkındaki kurulum bilgilerine atıfta bulunan parametreyle bireysel olarak ölçülen bir öğeyi belirtir. Genel olarak bahsedilen özelliklerini doğrudan tarif eden fiziksel niceliklerdir; Parametreler, sistemin tepkisini belirlemek için yeterli olan özelliklerin kombinasyonudur. Özellikler, dikkate alınan sisteme bağlı olarak her tür boyuta sahip olabilir; Parametreler boyutsuzdur ya da zaman boyutuna veya onun karşılıklığına sahiptir."[2] Terim, mühendislik bağlamlarında kullanılabilir, bununla birlikte tipik olarak fizik bilimlerde kullanılır. Bilgisayarda, parametre "bir işlev, prosedür, altprogram, komut veya programa iletilen referans veya değer" olarak tanımlanır.[1] Örneğin, bir dosyanın adı (bir parametre) belirli bir işlevi yerine getiren bir bilgisayar programına geçirilir; Diğer bir deyişle, bir program, üzerinde karşılık gelen belirli işlevi gerçekleştireceği bir dosyanın adını iletebilir. Çevre bilimlerinde özellikle kimya ve mikrobiyolojide, değer atanabilen ayrık bir kimyasal veva mikrobiyolojik varlığı tanımlamak için bir parametre kullanılır, yaygın olarak konsantrasyon, ancak mantıksal bir varlık olabilir. Bir istatistiksel bir sonuç (% 95 gibi) olabilir, bazı durumlarda subjektif bir değer olabilir. Bir istatistik bütünün bellibaşlı niteliklerini daha basit ve kısa olarak gösterme olanağı veren ölçülebilir büyüklük. Ana madde: Müzikal parametre Müzik teorisinde, bir parametre, diğer unsurlardan ayrı olarak manipüle edilebilen) bir öğeyi belirtir. Terimi, teorisyenler ya da besteciler bazen diğer müzikal yönleri parametre olarak kabul etmiş olsa da, özellikle perde, ses şiddeti, süre ve tını için kullanılır. Bu terim özellikle seri müzikat kabul etmiş olarak kabul etmiş olsa da, özellikle perde, ses şiddeti, süre ve tını için kullanılır. Bu terim özellikle seri müzikat yönleri parametre olarak kabul etmiş olsa da, özellikle perde, ses şiddeti, süre ve tını için kullanılır. serileri izlemesi mümkündür. Paul Lansky ve George Perle, bu anlamda "parametre" sözcüğünün genişlemesini eleştirdiler, çünkü matematiksel anlamıyla yakından ilişkili değil[3] ama ortak olarak kaldı. Ses işleme birimlerinin (atak, serbest bırakma, oran, eşik ve bir kompresör üzerindeki diğer değişkenler gibi) fonksiyonları ünitenin türüne özgü parametreler (kompresör, ekolayzır, vs.) tarafından tanımlandığı için bu terim müzik üretiminde de yaygındır. (Gecikme vb.). Değişken Koordinat sistemi ^ a b "Parameter" 24 Kasım 2016 tarihinde Wayback Machine sitesinde
arşivlendi. in TheFreeDictionary.com. ^ Trimmer, John D. (1950). Response of Physical Systems. New York: Wiley. s. 13. ^ Paul Lansky & George Perle. "Parameter". In L. Root, Deane. Grove Music Online. Oxford University Press " sayfasından alınmıştır Selamlar bu serimizde istatistikte çoğu zaman basit olduğu için hızlı bir şekilde geçilen ve sonrasında bunlara geri dönüp bakılmak zorunda kalınan temel kavramlar hakkında konuşacağız. Bu serinin ilk yazısı olduğu için biraz temelden alacağım.Photo by Jakub Żerdzicki on UnsplashTemel kavramlar genelde bir konuya başladığımızda hızlıca geçilen bölümlerdir ama bu bölümlerdir ama bu bölümleri iyice anlamadığımız zamanlarda geri dönüp bakma ihtiyacı duyarız . Bugün konuşacağımız kavramlar,İstatistik Nedir?Ana Kütle Nedir?Parametre Nedir?İstatistik, belirli bir amaç için gözlemler yapılarak verilerin toplanması, verilerin tablolar ve grafikler halinde özetlenmesi, elde edilen sonuçların analizi ve yorumu için gerekli yöntemlerin geliştirilmesi ve uygulanması ile objektif karar vermede önemli bir rolü olan bilim dalıdır. Ana kütle veya örneklemi oluşturan ve gözlem konusu olarak ele alınabilen kolektif olaylardan her birine "birim" denir. Bir olayın birim olabilmesi icin: ölcülmeye va da sayılmaya elverisli olması yeva "kategorize edilebilir" olmalı, "Homojen" olmalarının yanı sıra "acık ve keşkin" bir sekilde tanımlanmalıdır. Birim tanımını yaptığımıza göre nedir bu ana kütle? Ana Kütle Nedir? Your domain is expired. Renew the domain to activate the website Website content is unavailable due to the fact that domain has expired. Renew your domain. Log in to your domain. Log in to your domain checker tool to find the perfect name for your online project. Get new domain İstatistik Kitle özelliklerinin sayısal değerlerine PARAMETRE denir. Araştırma kitle yerine örneklemden elde edilen sayısal değerlere İSTATİSTİK denir. Kaynak: Yrd. Doç. Dr. Andım Oben Balce - Yrd. Doç. Dr. Serdar Demir, "İstatistik Ders Notları", Pamukkale Üniversitesi İktisadi ve İdari Bilimler Fakültesi Ekonometri Bölümü, Denizli, 2007. Bu görüntü, bir küre üzerindeki parametre eğrilerini gösteriyor. Ancak, u sabit olduğunda bu eğriler tamamlanmamış durumda, bu nedenle bu eksik kısımların sanki kürenin arkasında devam ediyormuş gibi düşünülmesi gerekiyor. Parametre (Eski Yunancadan παρά para: "yanında", "karşın"; ve μέτρον, metron: "ölçmek") belirli bir sistemi tanımlamak veya sınıflandırmak için yardımcı olabilecek herhangi bir özellik (bir etkinlik, proje, nesne, durum, vb.). Parametre, sistemi tanımlarken veya performansını, durumunu değerlendirirken yararlı veya kritik olan bir sistem unsurudur. Parametre terimi, mühendislik, matematik, istatistik, mantık ve dilbilim, bilgisayar ve bilgisayar programlama, gibi çeşitli disiplinlerde daha speşifik anlamlara sahiptir. Bu alanların içinde ve karşısında, parametrenin farklı kullanımlarının ve genellikle argüman, özellik, aksiyom, değişken, işlev, özellik gibi diğer terimlerin dikkatli ayrımı yapılmalıdır.[1] Matematiksel fonksiyonlar, değişkenler tarafından belirlenen bir veya daha fazla argümana sahiptir. Bir işlev tanımında parametreler de olabilir, ancak değişkenler arasında listelenmez. Parametreler halihazırda, bir bütün fonksiyon ailesini, parametrelerin her geçerli değer seti için bir tanımını tanımlar. Örneğin ikinci dereceden bir fonksiyon f (x) = a x 2 + b x + c {\displaystyle {\begin{aligned}f(x)&=ax^{2}+bx+c\\end{aligned}} Burada, x değişkeni işlevin argümanını belirtir, ancak a, b ve c hangi belirli ikinci dereceden fonksiyonun değerlendirildiğini belirleyen parametrelerdir. Parametrenin bağımlılığını belirtmek için işlev adına bir parametre eklenebilir. Örneğin b tabanında bir logaritma, log b (x) = log (x) log (b) {\log(b)}} Burada b, hangi logaritmik işlevin kullanıldığını gösteren bir parametredir. Fonksiyonun bir argümanı değildir ve örnek türev olarak düşünülürse sabit olacaktır log b (x) = log (x) log {b}(x) = {\log(x)}. Bazı resmi olmayan durumlarda, bir işlev tanımındaki sembollerin bir kısmının ya da tümünün parametreler olup olmadığı konvansiyon meselesidir. Bununla birlikte, sembollerin durumunun parametre ve değişken arasında değiştirilmesi fonksiyonu bir matematiksel nesne olarak değiştirir. Örneğin, düşen faktörel güç için gösterim n k = n (n - 1) (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2) … (n - 2 k + 1) {\displaystyle n^{\underline {k}}=n(n-1)(n-2)\cdots (n-k+1)}, (k parametre olarak düşünüldüğünde) n'nin bir polinom fonksiyonunu tanımlar, ancak k'nin bir polinom fonksiyonunu tanımlar, ancak k'nin bir polinom fonksiyonunu tanımlar. Bu gibi durumların daha resmi gösterimi tipik olarak (bazen "parametreler" olarak adlandırılacak olanlar dahil olmak üzere) çeşitli değişkenlerin bir fonksiyonu ile başlar. Örneğin, (n , k) \mapsto n k _ {\displaystyle (n,k)\mapsto n^{\underline {k}} dikkate alınması gereken en temel nesne olarak, daha sonra ana değişkenden daha az değişkenden daha az değişkenderin bir fonksiyonları körling yoluyla tanımlamak. Bazen, bazı parametrelerle birlikte tüm fonksiyonları parametrik aile olarak, yani fonksiyonların endeksli ailesi olarak düşünülmesi yararlıdır. Bir olasılık dağılımı gibi tanımlanmıştır: Bir model olarak, belirli bir fiziksel durumu açıklayan ilişkilere atıfta bulunuruz. Tipik olarak, model bir veya daha fazla denklemden oluşur. Değişkenler ve parametreler sınıflandırdığımız denklemlerin göründüğü bağlama bağlıdır. Genellikle model, bir deneyde bağımsız olarak ölçülebilen nicelikler arasındaki ilişkileri açıklamak üzere tasarlanmıştır, bunlar modelin değişkenleridir. Bununla birlikte, bu ilişkileri formüle etmek için, doğanın kendine özgü özelliklerini (veya belirli bir deneyde kullanılan malzeme ve ekipman) gösteren "sabitler" sıklıkla ortaya konur. Analitik geometride eğriler genellikle bazı işlevlerin görüntüsü olarak verilir. Fonksiyonun argüman daima "parametre" olarak adlandırılır. Başlangıç merkezli yarıçap 1 dairesi birden fazla formda tanımlanabilir: Tam Form x 2 + y 2 = 1 {\displaystyle $(x,y) = (\cos t, \sin t)$ } Burada t parametredir. Bu nedenle, başka yerde fonksiyon olarak adlandırılabilecek bu denklemler, parametrik denklemler olarak karakterize edilen analitik geometride bulunur ve bağımsız değişkenler parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. Matematiksel analizde, genellikle bir parametre olarak kabul edilir. fonksiyonuun argümanı ve sağ tarafta, integralin dayandığı parametredir. İntegrali değerlendirirken t sabit tutulur ve bu nedenle bir parametre olarak kabul edilir. t'nin bir değişken olduğunu düşünürüz. x miktarı kukla değişken veya entegrasyon değişkenidir (karışıklık yaratan, aynı zamanda bazen entegrasyon parametresi olarak da adlandırılır). İstatistik ve ekonometride, yukarıdaki olasılık çerçevesi hala geçerliliğini korur ancak, gözlemlenen verilere dayanan dağılım parametrelerinin tahmin edilmesine veya bunlar hakkındaki hipotezlerin test edilmesine kaymaktadır. Klasik tahminlerde bu parametreler "sabit fakat bilinmiyor" olarak kabul edilir, ancak Bayes tahmininde rastgele değişken olarak ele alınır ve belirsizlikler bir dağılım olarak tanımlanır. İstatistik tahmin teorisinde, "istatistik, numunenin alındığı popülasyonun sayısal karakteristiği olan ilgili parametrenin tahmini olarak kullanılabilen bir numunenin sayısal özelliğidir. Örneğin, X - {\displaystyle {\overline {X}}}, olarak belirtilen numune ortalaması (tahmini), numunenin alındığı popülasyonun µ cinsinden ifade edilen ortalaması (tahmini), numunenin alındığı popülasyonun σ2, olarak ifade edilen varyans parametresini tahmin etmek için kullanılabilir. (Örnek standart sapmanın (S) popülasyonun standart sapmanın (o) ilişkin tarafsız bir tahmini.) Olasılık dağılımlarının belirli bir parametrik ailesini varsaymadan istatistiksel çıkarımlar yapmak mümkündür. Bu durumda, daha önce açıklanan parametrik istatistiklerin tersine, parametrik olmayan istatistiklerden bahsedilir. Örneğin, Spearman'ın sıralama korelasyon katsayısına dayanan bir
test, istatistiğin, gerçek değerlerini dikkate almayan (ve böylece örneklendiği dağılımdan bağımsız olarak) verilerin sıralamadaki sıralamasından hesaplandığından, parametrik olmayan olarak adlandırılacaktır; Pearson'ın ürün-momenti korelasyon katsayısı parametreyi tahmin eder. Mühendislikte (özellikle veri toplama dahil olmak üzere) parametre, nadiren de olsa bireysel olarak ölçülen bir maddeyi belirtir. Bu kullanım tutarlı değildir, cünkü parametre terimi bu bağlantı hakkındaki kurulum bilgilerine atıfta bulunan parametreyle bireysel olarak bahsedilen özelliklerini doğrudan tarif eden fiziksel özelliklerini doğrudan tarif eden fiziksel özelliklerini bu bağlantı hakkındaki kurulum bilgilerine atıfta bulunan parametreyle bireysel olarak bahsedilen özelliklerini doğrudan tarif eden fiziksel özelliklerin kombinasyonudur. Özellikler, dikkate alınan sisteme bağlı olarak her tür boyuta sahip olabilir; Parametreler boyutsuzdur va da zaman boyutuna veva onun karşılıklığına sahiptir."[2] Terim, mühendislik bağlamlarında kullanılabilir, bununla birlikte tipik olarak fizik bilimlerde kullanılır. Bilgisayarda, parametre "bir islev, prosedür, altprogram komut veya programa iletilen referans veya değer" olarak tanımlanır.[1] Örneğin, bir dosyanın adı (bir parametre) belirli işlevi gerçekleştireceği bir dosyanın adını iletebilir. Çevre bilimlerinde özellikle kimya ve mikrobiyolojide, değer atanabilen ayrık bir kimyasal veya mikrobiyolojik varlığı tanımlamak için bir parametre kullanılır, yaygın olarak konsantrasyon, ancak mantıksal bir varlık olabilir. Bir istatistik bütünün bellibaşlı niteliklerini daha basit ve kısa olarak gösterme olanağı veren ölçülebilir büyüklük. Ana madde: Müzikal parametre, diğer unsurlardan ayrı olarak manipüle edilebilen (beste edilebilen) bir öğeyi belirtir. Terimi, teorisyenler ya da besteciler bazen diğer müzikal yönleri parametre olarak kabul etmiş olsa da, özellikle perde, ses şiddeti, süre ve tını için kullanılır. Bu terim özellikle seri müzikte kullanılır, burada her parametrenin belirli serileri izlemesi mümkündür. Paul Lansky ve George Perle, bu anlamda "parametre" sözcüğünün genişlemesini eleştirdiler, çünkü matematiksel anlamıyla yakından ilişkili değil[3] ama ortak olarak kaldı. Ses işleme birimlerinin (atak, serbest bırakma, oran, eşik ve bir kompresör üzerindeki diğer değişkenler gibi) fonksiyonları ünitenin türüne özgü parametreler (kompresör, ekolayzır, vs.) tarafından tanımlandığı için bu terim müzik üretiminde de yaygındır. (Gecikme vb.). Değişken Koordinat sistemi ^ a b "Parameter" 24 Kasım 2016 tarihinde Wayback Machine sitesinde arşivlendi. in TheFreeDictionary.com. ^ Trimmer, John D. (1950). Response of Physical Systems, New York: Wiley, s. 13. ^ Paul Lansky & George Perle, "Parameter", In L. Root, Deane, Grove Music Online, Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Music Oxford Musi simplified (right) forms Chinese characters are logographs used to write the Chinese languages and others from regions influenced by Chinese characters have changed greatly over the past three millennia. Unlike letters in alphabets that directly reflect the sounds of speech, Chinese characters generally represent morphemes—the units of meaning in a language—often encoding aspects of pronunciation as well as meaning. Writing all of a language's frequently used vocabulary requires 2000-3000 characters; as of 2024, nearly 100,000 have been identified and included in The Unicode Standard. Characters are composed of strokes written in a fixed order Historically, methods of writing them include inscribing stone, bone, or bronze; brushing ink onto silk, bamboo, or paper; and printing with woodblocks or moveable type. More recent technologies using Chinese characters include telegraph codes and typewriters, as well as input methods and text encodings on computers. (Full article...) Recently featured: Ezra Pound Dracunculiasis Red-capped parrot Archive By email More featured articles About Marcy Rheintgen ... that a 700-year-old fortification in present-day South Korea was mostly destroyed during the construction of a coastal road? ... that some people ski every month of the year? ... that Tarmidi Suhardjo was fired from his party's leadership roles because he ran for governor? ... that after Slovak actress Hana Meličková moved to Prague to study piano, she secretly enrolled in acting classes? ... that the riverine rabbit was thought to be extinct for more than 30 years? ... that Australian NFL player Laki Tasi got into American football at the suggestion of a burger shop owner? ... that guests at the launch of the bonkbuster Mount! were given polo mints to feed to a white stallion? Archive Start a new article Nominate an article stall at the launch of the bonkbuster Mount! were given polo mints to feed to a white stallion? Nicusor Dan Author Banu Mushtaq and translator Deepa Bhasthi win the International Booker Prize for Heart Lamp: Selected Stories. Nicusor Dan (pictured) is elected as president of Romania. In the Portuguese legislative election, the Democratic Alliance wins the most seats in parliament. Austria, represented by JJ with the song "Wasted Love", wins the Eurovision Song Contest. In the Philippines, the Alyansa para sa Bagong Pilipinas wins the most seats in the Senate elections. Ongoing: Gaza war M23 campaign Russian invasion of Ukraine timeline Sudanese civil war timeline Recent deaths: Benjamin Ritchie Jadwiga Rappé Bachtiar Basri Daniel Bilalian Eddie Sheldrake Domingos Maubere Nominate an article May 24: Aldersgate Day (Methodism) Eric XIV of Sweden (pictured) and his guards murdered five incarcerated nobles, including some members of the influential Sture family. 1689 - The Act of Toleration became law, granting freedom of worship to English nonconformists under certain circumstances, but deliberately excluding Catholics. 1798 - The Irish Rebellion of 1798 began, with battles beginning in County Kildare and fighting later spreading across the country. author James Baldwin in an unsuccessful attempt to improve race relations. 2014 - A gunman involved in Islamic extremism opened fire at the Jewish Museum of Belgium in Brussels, killing four people. Robert Hues (d. 1632)Philip Pearlstein (b. 1974)Stormé DeLarverie (d. 2014) More anniversaries: May 23 May 24 May 25 Archive By email List of days of the year About Germanicus Julius Caesar (24 May 15 BC - 10 October AD 19) was an ancient Roman general and politician most famously known for his campaigns against Arminius in Germania. The son of Nero Claudius Drusus and Antonia Minor, Germanicus was born into an influential branch of the patrician gens Claudia. The agnomen Germanicus was added to his full name in 9 BC when it was posthumously awarded to his father in honor of his victories in Germanicus' great-uncle Augustus; ten years later, Tiberius succeeded Augustus as Roman emperor. As a result of his adoption, Germanicus became an official member of the gens Julia, another prominent family, to which he was related on his mother's side. His connection to the Julii Caesares was further consolidated through a marriage between him and Agrippina the Elder, a granddaughter of Augustus. He was also the father of Caligula, the maternal grandfather of Nero, and the older brother of Claudius. This bust, depicting Germanicus in AD 4, is in the collection of the J. Paul Getty Museum. Sculpture credit: unknown; photographed by J. Paul Getty Museum. Sculpture credit: unknown; photographed by J. Paul Getty Museum. editors, with resources, links, tasks, and announcements. Village pump - Forum for discussions about Wikipedia itself, including policies and technical issues. Site news - Sources of news about Wikipedia and the broader Wikimedia movement. Teahouse - Ask basic questions about using or editing Wikipedia. Help desk - Ask questions about using or editing Wikipedia. Reference desk - Ask research questions about encyclopedic topics. Content portals - A unique way to navigate the encyclopedia. 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written in English. Many other Wikipedias are available; some of the largest are listed below. 1,000,000+ articles العربية Deutsch Español العربية Deutsch Español العربية Deutsch Español العربية Français Italiano Nederlands 日本語 Polski Português Pyccкий Svenska Ykpaïнська Tiếng Việt 中文 250,000+ articles Bahasa Indonesia Bahasa Melayu Bân lâm-gú Български Català Čeština Dansk Eesti Esperanto Euskara עברית المال Magyar Norsk bokmål Română Simple English Slovenčina Srpski Srpskohrvatski Suomi Türkçe Oʻzbekcha 50,000+ articles Asturianu Azərbaycanca אנרית Eλληνικά Frysk Gaeilge Galego Hrvatski Suomi Türkçe Oʻzbekcha 50,000+ articles Asturianu Azərbaycanca בענט خلاف المالي 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January 20 - Battle of Rio de Janeiro: Portuguese forces under the command of Estácio de Sá definitively drive the French out of Rio de Janeiro. January - A Spanish force under the command of Captain Juan Pardo establishes Fort San Juan, in the Native American settlement of Joara. The fort is the first European settlement in present-day North Carolina. February 4 - Prince Zhu Zaiji, son of the Jiajing Emperor, la contest the throne of Ming Dynasty China as the
Longqing Emperor, becomes the ascends the throne of Mary, Queen of Scots, is the first European settlement in present-day North Carolina. murdered at the Provost's House in Kirk o' Field, Edinburgh.[2] March 13 - Battle of Oosterweel: A Spanish mercenary army surprises and kills a band of rebels near Antwerp in the Habsburg Netherlands, beginning the Eighty Years' War. April 9 - In India, the Battle of Thanesar is fought in what is now the Indian state of Haryana. The Mughal Emperor Akbar, with 300 men, wins a victory over more than 7,000 warriors of the Sanyasi Hindu sect. Akbar's army has two cannons, 400 rifles and 75 elephants. April 10 - Henrique I Nerika a Mpudi becomes the new ruler of the Kingdom of Kongo in what is now the western part of the Democratic Republic of the Congo and the northern portion of Angola. Henrique succeeds his nephew, Bernardo I of Kongo April 12 - The Earl of Bothwell is acquitted on charges of murder in the February 10 killing of Lord Darnley, the husband of Mary Queen of Scottsh clerics and nobles recommends Bothwell as an appropriate husband for Queen Mary and approves his acquittal after trial for the murder of her preventing her from traveling from her palace to Edinburgh, then rapes her. May 15 - Mary, Queen of Scots, marries the Earl of Bothwell under duress.[4] May 24 - Sture Murders: The mentally unstable King Erik XIV of Sweden and his guards murder five incarcerated nobles at the Battle of Carberry Hill and imprisoned in Lochleven Castle. July 24 - Mary, Queen of Scots, is forced to abdicate, and replaced by her one-year-old son James VI. July 25 - The City of Santiago de León de Caracas is founded by Diego de Losada. July 29 - James VI is crowned at Stirling. August 22 - The Duke of Alba is sent to the Netherlands. Prince William of Orange is outlawed, and Lamoral, Count of Egmont imprisoned. September 9 - At a dinner, the Duke of Alba arrests Lamoral, Count of Egmont and Philip de Montmorency, Count and Philip de Montmorency, Count Religion begins in France, when Louis, Prince of Condé and Gaspard de Coligny fail in an attempt to capture King Charles IX and his mother at Meaux. The Huguenots do capture several cities (including Orléans), and march on Paris. October 7 - Bible translations into Welsh: The New Testament is first published in Welsh, in William Salesbury's translation from the Greek. November 10 - Battle of Saint-Denis: Anne de Montmorency, with 16,000 Royalists, falls on Condé's 3,500 Huguenots. The Huguenots surprisingly hold on for some hours before being driven off. Montmorency is mortally wounded.[5] November 21 (10th day of 11th month, Eiroku 10) - In Japan, the Tōdai-ji Great Buddha Hall in the Nara Prefecture is destroyed after a six-month siege by Matsunaga Hisahide against Miyoshi Nagaitsu and the Miyoshi clan. Reconstruction of the temple does not take place until 140 years later in 1709. December 4 - Antão de Noronha, Viceroy of Portuguese India (now the Indian state of Goa) issues decrees prohibiting the public performance of Hindu rituals for marriages, cremations, and sacred thread wearing. Other rules require all natives 15 or older to attend Christian religious services, upon penalty of punishment.[6] December 12 - The Scottish Parliament votes to approve the Act Anent the demission of the Crown in favour of our Sovereign Lord, and his Majesty's Coronation 1567, an act regarding the abdication of Mary Queen of Scots in favor of her son James VI and the coronation of James, and confirms James as the legal ruler.[7] Mary's half brother, James Stewart, 1st Earl of Moray, is appointed as the regent to rule on behalf of the 18-month-old King of Scotland. In that Moray is absent from Scotland at the time, the Parliament appoints a committee of seven deputy regents to rule on behalf of Moray's power to rule on behalf of King James. King Frederick II of Denmark and Norway founds Fredrikstad in Norway founds Fredrikstad in Norway. Construction of Villa Capra "La Rotonda" in Vicenza, designed by Andrea Palladio, begins. It will be one of the most influential designs in the history of architecture.[8] Rugby School, one of the oldest public schools in England, is founded. Although sparse maritime trade existed since its founding, the Ming dynasty government of China officially revokes the haijin maritime trade existed since its founding, the Ming dynasty government of China officially revokes the haijin maritime trade ban, reinstating foreign trade with all countries except Japan.[9] Jacob van Heemskerk Infanta Catherine Michelle of Spain January 1 – Fabio Colonna, Italian scientist (d. 1640) January 4 - François d'Aguilon, Belgian Jesuit mathematician (d. 1617) January 25 - Archduchess Margaret of Austria (d. 1633) January 27 - Anna Maria of Hesse-Kassel, Countess Consort of Nassau-Saarbrücke (d. 1626) February 3 - Anna Maria of Brandenburg, Duchess Consort of Pomerania (d. 1618) February 12 -Thomas Campion, English poet and composer (d. 1620)[10] February 23 - Elisabeth of Brunswick-Wolfenbüttel, Countess of Holstein-Schauenburg and Duchess Consort of Brunswick-Wolfenbüttel, Countess of Holstein-Schauenburg (d. 1640) March 13 (bapt.) - Jacob van Heemskerk, Dutch admiral and explorer (d. 1607) March 17 - Akizuki Tanenaga, Japanese samurai and soldier (d. 1614) April 10 - John Louis I, Count of Nassau-Wiesbaden-Idstein, Germany noble (d. 1596) April 26 - Nicolas Formé, French composer (d. 1638) May 2 - Sebald de Weert, Dutch captain, vice-admiral of the Dutch East India Company (d. 1603) May 9 - John George I, Prince of Anhalt-Dessau (1603-1618) (d. 1618) May 13 - Don Giovanni de' Medici, Italian military commander and diplomat (d. 1621) May 15 - Claudio Monteverdi, Italian composer (d. 1630) August 14 - Luigi Caponaro, Italian healer (d. 1622) August 15 - Philip III, Margrave of Baden-Rodemachern (1588-1620) (d. 1620) August 21 - Luigi Caponaro, Italian composer (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1621) May 15 - Claudio Monteverdi, Italian composer (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1620) August 21 - Luigi Caponaro, Italian composer (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1620) August 21 - Luigi Caponaro, Italian composer (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) June 25 - Jacob Ulfeldt, Danish politician (d. 1643) Jun Francis de Sales, Savoyard Bishop of Geneva and saint (d. 1622) September - Edward Sutton, 5th Baron Dudley, English landowner (d. 1643) September 2 - György Thurzó, Palatine of Hungary (d. 1616) September 5 - Date Masamune, Japanese daimyō (d. 1636) September 2 - György Thurzó, Palatine of Hungary (d. 1619) October 10 - Infanta Catherine Michelle of Spain (d. 1597) November 7 - Margherita Farnese, Benedictine nun (d. 1643) November 1 - Diego Sarmiento de Acuña, 1st Count of Gondomar, Spanish
diplomat (d. 1626) November 7 - Margherita Farnese, Benedictine nun (d. 1643) November 14 - Maurice of Nassau, Prince of Orange (d. 1625) November 16 - Anna of Saxony, German noblewoman (d. 1613) November 21 - Anne de Xainctonge, French religious (d. 1643) December 18 Cornelius a Lapide, Jesuit exegete (d. 1637) Tachibana Muneshige, Japanese samurai and soldier (d. 1643) date unknown Isabel Barreto, Spanish admiral (d. 1612) Pierre Biard, French settler and Jesuit missionary (d. 1622) Adriaen Block, Dutch fur trader and navigator (d. 1624) Jacques Clément, French assassin of Henry III of France (d. 1650) Willem Schouten, Dutch navigator (d. 1625) Torii Tadamasa, Japanese nobleman (d. 1615) Emperor Jiajing January 12 - Eva von Trott, German noble and courtier (b. 1505) January 17 - Sampiero Corso, Corsican mercenary leader (b. 1498) January 23 - Jiajing Emperor of China (b. 1507) January 26 - Nicholas Wotton, English diplomat (c. b. 1497) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 10 - Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 20 - Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1545) February 20 - 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Michael Stifel, German mathematician (b. 1487) May 2 - Marin Držić, Croatian writer (b. 1503) April 19 - Michael Stifel, German mathematician (b. 1487) May 2 - Marin Držić, Croatian writer (b. 1503) April 19 - Michael Stifel, German mathematician (b. 1487) May 2 - Marin Držić, Croatian writer (b. 1503) April 19 - Michael Stifel, German mathematician (b. 1503) April 18 - Wilhelm von Grumbach, German mathematician (b. 1487) May 2 - Marin Držić, Croatian writer (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1487) May 2 - Marin Držić, Croatian writer (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - Wilhelm von Grumbach, German mathematician (b. 1508) April 18 - 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Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - Pietro Carnesecchi, Italian humanist (b. 1508) October 31 - 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Find sources: "15th century" - news · newspapers · books · scholar · JSTOR (September 2022) (Learn how and when to remove this message) Millennia 2nd millennium Centuries 14th century 15th century 16th century Timelines 14th century 15th century 16th century State leaders 14th century 15th century 16th century Decades 1400s 1420s 1430s 1440s 1450s 1460s 1470s 1480s 1490s Categories: Births - Deaths Establishments vte Ottoman Sultan Mehmed II, victorious at the Ottoman conquest of Constantinople and the fall of the Byzantine Empire. Various historians describe it as the end of the Middle Ages. The Surrender of Granada by Francisco Pradilla Ortiz, 1882: Muhammad XII surrenders to Ferdinand and Isabella Gergio Deluci, Christopher Columbus arrives in the Americas in 1492, 1893 painting. The 15th century was the century which spans the Julian calendar dates from 1 January 1401
(represented by the Roman numerals MCDI) to 31 December 1500 (MD). In Europe, the 15th century includes parts of the Late Middle Ages, the Early Renaissance, and the early modern period. Many technological, social and cultural developments of the 15th century can in retrospect be seen as heralding the "European miracle" of the following centuries. The architectural perspective, and the modern fields which are known today as banking and accounting were founded in Italy. The Hundred Years' War ended with a decisive French victory over the English in the Battle of Castillon. Financial troubles in England following the conflict resulted in the Wars of the Roses, a series of dynastic wars' War ended with a decisive French victory over the English in the Battle of Castillon. for the throne of England. The conflicts ended with the defeat of Richard III by Henry VII at the Battle of Bosworth Field, establishing the end of the world and the capital of the Byzantine Empire, fell to the emerging Muslim Ottoman Turks, marking the end of the tremendously influential Byzantine Empire and, for some historians, the end of the Middle Ages.[1] This led to the migration of Greek scholars and texts to Italy, while Johannes Gutenberg's invention of a mechanical movable type began the printing press. These two events played key roles in the development of the Renaissance.[2][3] The Roman paparo was split in two parts in Europe for decades (the so-called Western Schism), until the Council of Constance. The division of the Protestant Reformation in the following century. Islamic Spain became dissolved through the Christian Reconquista followed by the forced conversions and the Muslim rebellion,[4] ending over seven centuries of Islamic rule and returning southern Spain to Christian rulers. The spices, wines and precious metals of the Ottoman Empire, which introduced new taxes and tariffs against European traders. This had led to explorers like Christopher Columbus finding a route to reach to India from the African coast. In Asia, the Timurid Empire collapsed and the Afghan Pashtun Lodi dynasty took control of the Delhi Sultanate. Under the rule of the Yongle Emperor, who built the Forbidden City and commanded Zheng He to explore the world overseas, the Ming dynasty's territory reached its pinnacle. In Africa, the spread of Islam led to the destruction of the Christian kingdoms of Nubia, by the end of the century leaving only Alodia (which was to collapse in 1504). The formerly vast Mali Empire teetered on the brink of collapse, under pressure from the rising Songhai Empire. In the Americas, both the Aztec Empire and the Inca Empire reached the peak of their influence, but the voyages of Christopher Columbus and other European voyages of discovery in the Americas, beginning the European colonization of the Americas, changed the course of modern history. Portrait of the founder of accounting, Luca Pacioli, by Jacopo de' Barbari (Museo di Capodimonte). 1401: Dilawar Khan establishes the Malwa Sultanate in present-day central India. 1402: Ottoman and Timurid Empires fight at the Battle of Ankara resulting in the capture of Bayezid I by Timur. 1402: Sultanate of Malacca founded by Parameswara.[6] 1402: The settlement of the Canary Islands signals the beginning of the Spanish Empire. 1403-1413: Ottoman Interregnum, a civil war between the four sons of Bayezid I. 1403: The Yongle Emperor moves the capital of China from Nanjing to Beijing [7] 1404-1406: Regreg War, Majapahit civil war of secession between Wikramawardhana against Wirabhumi. 1405-1433: During the Ming treasure voyages, Admiral Zheng He of China sails through the Indian Ocean to Malacca, India, Ceylon, Persia, Arabia, and East Africa to spread China's influence and sovereignty. The first voyage, a massive Ming dynasty naval expedition ending in 1407, visited Java, Palembang, Malacca, Aru, Samudera and Lambri.[8] 1408: The last recorded event to occur in the Norse settlements of Greenland was a wedding in Hvalsey in the Eastern Settlement in 1408. The Northern Yuan dynasty and Turco-Mongol residual states and domains by the 15th century 1410: The Battle of Grunwald is the decisive battle of the Polish-Lithuanian-Teutonic War leading to the downfall of the Teutonic Knights. 1410-1415: The last Welsh war of independence, led by Owain Glyndŵr. 1414: Khizr Khan, deputised by Timur to be the governor of Multan, takes over Delhi founding the Sayyid dynasty. 1415: Henry the Navigator leads the conquest of Ceuta from the Moors marking the beginning of the Portuguese Empire. 1415: Jan Hus is burned at the stake as a heretic at the Council of Constance. 1417: A large goodwill mission led by three kings of Sulu, the Eastern King Paduka Pahala, the Western king Maharaja Kolamating and Cave king Paduka Prabhu as well as 340 members of their delegation, in what is now the southern Philippines, ploughed through the Pacific Ocean to China to pay tribute to the Yongle emperor of the Ming Dynasty. [9] 1417: The East king of Sulu, Paduka Pahala, on their way home, suddenly died in Dezhou, a city in east China's Shandong province. The Yongle Emperor Zhu Di commissioned artisans to build a tomb for the king.[10] 1419-1433: The Hussite Wars in Bohemia. Joan of Arc, a French peasant girl, directly influenced the result of the Hundred Years' War. 1420: Construction of the Chinese Forbidden City is completed in Beijing. 1420: In Sub-saharan Africa the Ife Empire has collapsed. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: James I returns to Scotland after being held hostage under t Martin V. 1427: Reign of Itzcoatl begins as the fourth tlatoani of Tenochtitlan and the first emperor of the Aztec Empire. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Joan of Arc ends the Siege regent rulers of the ancient kingdom of Tondo. 1431 9 January - Pretrial investigations for Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May - Nineteen-year-old Joan of Arc begins. 30 May -
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Detail of The Emperor's Approach showing the Xuande Emperor's royal carriage. Ming dynasty of China. 1440: Eton College founded by Henry VI. 1440s: The Golden Horde breaks up into the Siberia Khanate, the Khanate of Kazan the Astrakhan Khanate, the Crimean Khanate, and the Great Horde. 1440-1469: Under Moctezuma I, the Aztecs become the dominant power in the West African city of Benin, and turns it into an empire. 1440: Reign of Moctezuma I begins as the fifth tlatoani of Tenochtitlan and emperor of the Aztec Empire. 1441: Jan van Eyck, Flemish painter, dies. 1441: Portuguese navigators cruise West Africa and reestablish the European slave trade with a shipment of Africa to Portugal. 1441: A civil war between the Tutul Xiues and Cocom breaks out in the League of Mayapan. As a consequence, the league begins to disintegrate. 1442: Leonardo Bruni defines Middle Ages and Modern times. 1443: Abdur Razzaq visits India. 1443: King Sejong the Great publishes the hangul, the native phonetic alphabet system for the Korean language. 1444: The Albanian league is established in Lezha, Skanderbeg is elected leader. A war begins against the Ottoman Empire. An Albanian state is set up and lasts until 1479. 1444: Ottoman Empire under Sultan Murad II defeats the Polish and Hungarian armies under Władysław III of Poland and János Hunyadi at the Battle of Varna. 1445: The Kazan Khanate defeats the Grand Duchy of Moscow at the Battle of Varna. 1446: Mallikarjuna Raya succeeds his father Deva Raya II as monarch of the Vijayanagara Empire. 1447: Wijaya Parakrama Wardhana, succeeds Suhita as ruler of Majapahit.[11] 1449: Saint Srimanta Sankardeva was born. 1449: Esen Tayisi leads an Oirat Mongol invasion of China which culminate in the capture of the Zhengtong Emperor at Battle of Tumu Fortress. Angkor, the capital of the Khmer Empire, was abandoned in the 15th century. 1450s: Machu Picchu constructed. 1450: Dayang Kalangitan became the Queen regnant of the ancient kingdom of Tondo that started Tondo's political dominance over Luzon. 1451: Bahlul Khan Lodhi ascends the throne of the Delhi sultanate starting the Lodhi dynasty 1451: Rajasawardhana, born Bhre Pamotan, styled Brawijaya II succeeds Wijayaparakramawardhana as ruler of Majapahit. [11] 1453: The Fall of Constantinople marks the end of the Byzantine Empire and the beginning of the Classical Age of the Ottoman Empire. 1453: The Fall of Constantinople marks the end of the Byzantine Empire. the first battle in European history where cannons were a major factor in deciding the battle. 1453: Reign of Rajasawardhana ends.[11] 1454-1466: After defeating the Teutonic Knights in the House of York and the House of Lancaster. 1456: Joan of Arc is posthumously acquitted of heresy by the Catholic Church, redeeming her status as the heroine of France. 1456: The Siege of Belgrade halts the Ottomans' advance into Europe. 1456: Girishawardhana, styled Brawijaya III, becomes ruler of Majapahit.[11] 1457: Construction of Edo Castle begins. The seventeen Kuchkabals of Yucatán after The League of Mayapan in 1461. 1461: The League of Mayapan disintegrates. The league is replaced by seventeen Kuchkabal. 1461: The city of Sarajevo is founded by the Ottomans. 1461: 2 February - Battle of Mortimer's Cross: Yorkist troops led by Edward, Duke of York defeat Lancastrians under Owen Tudor and his son Jasper Tudor, Earl of Pembroke in Wales. 17 February - Second Battle of St Albans, England: The Earl of Warwick's army is defeated by a Lancastrian force under Queen Margaret, who recovers control of her husband. 4 March - The Duke of York seizes London and proclaims himself King Edward IV of England is deposed by the Duke of York seizes London and proclaims himself King Edward IV of England. 5 March - Henry VI of England is deposed by the Duke of York seizes London and proclaims himself King Edward IV of England. during war of the Roses. 29 March - Battle of Towton: Edward IV defeats Queen Margaret to make good his claim to the English throne (thought to be the bloodiest battle ever fought in England). 28 June - Edward IV, King of England (reigns until 1483). July - Byzantine general Graitzas Palaiologos honourably surrenders Salmeniko Castle, last garrison of the Despotate of the Morea, to invading forces of the Ottoman Empire after a year-long siege. Political map of Europe in 1470 22 July - Louis XI of France succeeds Charles VII of France succeeds Charles VII of France as king (reigns until 1483). 1462: Sonni Ali Ber, the ruler of the Songhai (or Songhay) Empire, along the Niger River, conquers Mali in the central Sudan by defeating the Tuareg contingent at Tombouctou (or Timbuktu and Djenné, into major cities. Ali Ber controls trade along the Niger River with a navy of war vessels. 1462: Mehmed the Conqueror is driven back by Wallachian prince Vlad III Dracula at The Night Attack. 1464: Edward IV of England secretly marries Elizabeth Woodville. 1465: The 1465 Morocco Abd al-Hagg II. 1466: Singhawikramawardhana, succeeds Girishawardhana, succeeds Girishawardhana as ruler of Majapahit.[11] 1467: Uzun Hasan defeats the Black Sheep Turkoman leader Jahān Shāh. 1467-1615: The Sengoku period is one of civil war in Japan. 1469: The marriage of Ferdinand II of Aragon and Isabella I of Castile leads to the unification of Spain. The renaissance king Matthias Corvinus of Hungary. His mercenary standing army (the Black Army) had the strongest military potential of its era. 1469 Matthias Corvinus of Hungary conquers some parts of Bohemia. 1469: Birth of Guru Nanak Dev. Beside followers of Sikhism, Guru Nanak is revered by Hindus and Muslim Sufis across the Indian subcontinent. 1469: Reign of Axayacatl begins in the Aztec Capital of Tenochtitlan as the sixth tlatoani and emperor of the Aztec Triple Alliance. 1470: The Moldavian forces under Stephen the Great defeat the Tatars of the Golden Horde at the Battle of Lipnic. 1471: The kingdom of Champa suffers a massive defeat by the Vietnamese king Lê Thánh Tông. 1472: Abu Abd Allah al-Sheikh Muhammad ibn Yahya becomes the first Wattasid Sultan of Morocco. 1474-1477: Burgundy Wars of France, Switzerland Lorraine and Sigismund II of Habsburg against the Charles the Bold, Duke of Burgundy. 1478: Reign of Singhawikramawardhana ends.[11] 1478: The Great Mosque of Demak is the oldest mosque in Java, built by the Wali Songo during the reign of Sultan Raden Patah. 1479: Battle of Breadfield, Matthias Corvinus of Hungary defeated the Turks. 1479: JagatGuru Vallabhacharya Ji Mahaprabhu was born[12] The Siege of Rhodes (1480). Ships of the Hospitaliers in the forefront, and Turkish camp in the background. 1480: After the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained independence from the Great standing on the Ugra river, Muscovy gained
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View of Florence, birthplace of the Renaissance, in a 1493 woodcut from Hartmann Schedel's Nuremberg Chronicle 1492: The death of Sunni Ali Ber left a leadership void in the Songhai Empire, and his son was soon dethroned by Mamadou Toure who ascended the throne in 1493 under the name Askia (meaning "general") Muhammad made Songhai the largest empire in the history of West Africa. The empire went into decline, however, after 1528, when the now-blind Askia Muhammad was dethroned by his son, Askia Musa. 1492: Boabdil's surrender of Granada marks the end of the Spanish Reconquista and Al-Andalus. 1492: Ferdinand and Isabella sign the Alhambra Decree, expelling all Jews from Spain. 1493: Christopher Columbus landed in the Americas from Spain. 1493: Christopher Columbus landed in the Americas from Spain. known design for a helicopter. 1494: Spain and Portugal sign the Treaty of Tordesillas and agree to divide the World outside of Europe between themselves. 1495: Manuel I succeeds John II as the king of Portugal (reigns until 1521). 1497-1499: Vasco da Gama's first voyage from Europe to India and back. 1499: Ottoman fleet defeats Venetians at the Battle of Zonchio. 1499: University "Alcalá de Henares" in Madrid, Spain is built. 1499: Michelangelo's Pietà in St. Peter's Basilica is made in Rome 1500: Islam becomes the dominant religion across the Indonesian archipelago.[13] 1500: in an effort to increase his power. Bolkiah founded the city of Selurong—later named Maynila, on the other side of the Pasig River shortly after taking over Tondo from its monarch, Lakan Gambang.[14] 1500: Around late 15th century Bujangga Manik manuscript was composed, tell the story of Jaya Pakuan Bujangga Manik, a Sundanese Hindu hermit journeys throughout Java and Bali.[15] 1500: Charles of Ghent (future Lord of the Netherlands, King of Spain, Archduke of Austria, and Holy Roman Emperor) was born. 1500: Spanish navigator Vicente Yáñez Pinzón encounters Brazil but is prevented from claiming it by the Treaty of Tordesillas. 1500: Portuguese navigator Pedro Álvares Cabral claims Brazil for Portugal. 1500: The Ottoman fleet of Kemal Reis defeats the Venetians at the Second Battle of Lepanto. The Yongle Emperor (1360-1424) raised the Ming Empire to its highest power. Launched campaigns against the Mongols and reestablished Chinese rule in Vietnam Ulugh Beg (1394-1449), Timurid sultan who oversaw the cultural peak of the Timurid Renaissance Johannes Gutenberg (1400-1468), German inventor who introduced printing to Europe with his mechanical movable-type printing to Europe with his mechanical who ended the dominance of the Tatars in the lands of the Rus King Henry VII (1457-1509), the founder of the royal house of Tudor See also: Science and art. Rise of Modern English language from Middle English. Introduction of the noon bell in the Catholic world. Public banks. Yongle Encyclopedia—over 22,000 volumes. Hangul alphabet in Korea. Scotch whisky. Psychiatric hospitals[clarification needed]. Development of the woodcut for printing between 1400-1450. Movable type first used by King Taejong of Joseon—1403. (Movable type, which allowed individual characters to be arranged to form words, was invented in China by Bi Sheng between 1041 and 1048.) Although pioneered earlier in Korea and by the Chinese official Wang Zhen (with tin), bronze metal movable type printing is created in China by Hua Sui in 1490. Johannes Gutenberg advances the printing press in Europe (c. 1455) Linear perspective drawing perfected by Filippo Brunelleschi 1410-1415 Invention of the harpsichord c. 1450 Arrival of Christopher Columbus to the Americas in 1492. Crowley, Roger (2006). "The Conquestof Constantinople and the end of empire". Contemporary Review. Archived from the original on 22 August 2009. It is the end of the Middle Ages) ^ Encyclopædia Britannica, Renaissance, 2008, O.Ed. ^ Martin 1997; Man 2002 ^ Harvey 2005, p. 14. ^ Nanda, J. N (2005). Bengal: the unique state. Concept Publishing Company. p. 10. 2005. ISBN 978-81-8069-149-2. Bengal [...] was rich in the production and export of grain, salt, fruit, liquors and wines, precious metals and ornaments besides the output of its handlooms in silk and cotton. Europe referred to Bengal as the richest country to trade with. ^ Winstedt, R. O. (1948). "The Malay Founder of Medieval Malacca". Bulletin of the School of Oriental and African Studies, University of London. 12 (3/4). Cambridge University Press on behalf of School of Oriental and African Studies: 726-729. doi:10.1017/S0041977X00083312. [STOR 608731. * "An introduction to the Ming dynasty (1368-1644)". Khan Academy. Asian Art Museum. Retrieved 29 September 2018. * Modern interpretation of the place names recorded by Chinese chronicles can be found e.g. in Some Southeast Asian Polities Mentioned in the MSL Archived 12 July 2012 at the Wayback Machine by Geoffrey Wade ^ "Thousands in China are descendants of an ancient Filipino king. Here's how it happened". Filipiknow. 24 March 2017. ^ "New Sulu King research book by Chinese author debuts in Philippines". Xinhuanet. Archived from the original on 16 August 2021. ^ a b c d e f g Ricklefs (1991), page 18. ^ "Shri Mahaprabhuji Shri Vallabhacharyaji Biography | Pushti Sanskar". pushtisanskar.org. Retrieved 23 February 2019. Carating, Rodelio B.; Galanta, Raymundo G.; Bacatio, Clarita D. (23 April 2014). The Soils of the Philippines. Springer Science & Business. p. 437. Langer, William. 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Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. Find sources: "Parameter" - news · newspapers · books · scholar JSTOR (August 2011) (Learn how and when to remove this message) A parameter (from Ancient Greek παρά (pará) 'beside, subsidiary' and μέτρον (métron) 'measure'), generally, is any characteristic that can help in defining or classifying a particular system (meaning an event, project, object, situation, etc.). That is, a parameter is an element of a system

that is useful, or critical, when identifying the system, or when evaluating its performance, status, condition, etc. Parameter has more specific meanings within various disciplines, including mathematics, computer programming, engineering, statistics, logic, linguistics, and electronic musical composition. In addition to its technical uses, there are also extended uses, especially in non-scientific contexts, where it is used to mean defining characteristics or boundaries, as in the phrases 'test parameters' or 'game play parameters'. [citation needed] Main article: Modelization When a system is modeled by equations, the values that describe the system are called parameters'. [citation needed] Main article: Modelization When a system is modeled by equations, the values that describe the system are called parameters'. masses, the dimensions and shapes (for solid bodies), the densities and the viscosities (for fluids), appear as parameters in the equations modeling movements. There are often several choices for the parameters, and choosing a convenient set of parameters is called parameters is called parameters in the equations modeling movement of an object on the surface of a sphere much larger than the object (e.g. the Earth), there are two commonly used parametrizations of its position: angular coordinates (like latitude/longitude), which neatly describe large movements along circles on the sphere, and directional distance from a known point (e.g. "10km NNW of Toronto" or equivalently "8km due North, and then 6km due West, from Toronto"), which are often simpler for movement confined to a (relatively) small area, like within a particular country or region. Such parametrizations are also relevant to the modelization of geographic areas (i.e. map drawing). Mathematical functions have one or more arguments that are designated in the definition by variables. A function definition can also contain parameters, but unlike variables, parameters are not listed among the arguments that the functions, one for every valid set of values of the parameters. For instance, one could define a general quadratic function by declaring f (x) = a x 2 + b x + c {\displaystyle f(x)=ax^{2}+bx+c}; Here, the variable x designates the function's argument, but a, b, and c are parameters (in this instance, also called coefficients) that determine which particular quadratic function is being considered. A parameter could be incorporated into the function name to indicate its dependence on the parameter. For instance, one may define the base-b logarithm by the formula log b (x) = log (x) log (b) {\log(b)}} where b is a parameter that indicates which logarithmic function is being used. It is not an argument of the function, and will, for instance, be a constant when considering the derivative log b' (x) = (x ln (b)) - 1 {\displaystyle \textstyle \log {b}'(x)=(x \ln(b))^{-1}}. In some informal situations it is a matter of convention (or historical accident) whether some or all of the symbols in a function definition are called parameters. However, changing the status of symbols between parameter and variable changes the function as a mathematical object. For instance, the notation for the falling factorial power n k $_=$ n (n - 1) (n - 2) \cdots (n - k + 1) {\displaystyle n^{(n-1)(n-2)}cdots (n-k+1)}, defines a polynomial function of n (when k is considered a parameter). Indeed, in the latter case, it is only defined for non-negative integer arguments. More formal presentations of such as (n, k) \mapsto n k _ {\displaystyle (n,k)\mapsto n^{\underline {k}}} as the most fundamental object being considered, then defining functions with fewer variables from the main one by means of currying. Sometimes it is useful to consider all functions. Examples from probability theory are given further below. In a section on frequently misused words in his book The Writer's Art, James J Kilpatrick quoted a letter from a correspondent, giving examples to illustrate the correct use of the word parameter: W.M. Woods ... a mathematician ... writes ... "... a variable is one of the many things a parameter: W.M. Woods ... a mathematician ... writes ... "... a variable is one of the many things a parameter: W.M. Woods ... a mathematician ... writes ... "... a variable is one of the many things a parameter is not." ... The dependent variable, the speed of the car, depends on the independent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... a write is not." ... The dependent variable is one of the many things a parameter is not." ... The dependent variable is one of the many things a parameter is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a write is not." ... a wr quoting Woods] "Now ... the engineers ... change the lever arms of the linkage ... the speed of the car ... will still depend on the pedal position ... but in a ... different manner. You have changed a parameter" A parameter" A parameter of the cut or boost to be set by one control, and the size of the cut or boost to be set by one control. by another. These settings, the frequency level of the peak or trough, are two of the parameters of a frequency response curve, and in a two-control equalisers may allow other parameters to be varied, such as skew. These parameters each describe some aspect of the response curve seen as a whole, over all frequencies. A graphic equaliser provides individual level controls for various frequency bands, each of which acts only on that particular frequency bands, each of a can be used, generating a different relation between x and y. Thus a is a parameter: it is less variable than the variable x or y, but it is not an explicit constant like the exponent 2. More precisely, changing the parameter: it is less variable than the variable x or y, but it is not an explicit constant like the exponent 2. More precisely, changing the parameter a gives a different (though related) problem, whereas the variables x and y (and their interrelation) are part of the problem itself. In calculating income based on wage and hours worked (income equals wage multiplied by hours worked), it is typically assumed that the number of hours worked an independent variable. In the context of a mathematical model, such as a probability distribution, the distinction between variables and parameters was described by Bard as follows: We refer to the relations which supposedly describe a certain physical situation, as a model. Typically, a model consists of one or more equations. The quantities appearing in the equations we classify into variables and parameters. The distinction between these is not always clear cut, and it frequently depends on the context in which the variables appear. Usually a model is designed to explain the relationships, however, one frequently introduces "constants" which stand for inherent properties of nature (or of the materials and equipment used in a given experiment). These are the parameters.[1] Main articles: Parametrization (geometry) In analytic geometry) In analytic geometry. These are the parameters.[1] Main articles: Parameters.[1]
Main articles: Parameters.[1] Main articles: Parameters.[1] Main articles: Parameters.[1] Main articles: Par parameter, lies in a real interval. For example, the unit circle can be specified in the following two ways: implicit form, the curve is the locus of points (x, y) in the Cartesian plane that satisfy the relation $x^2 + y^2 = 1$. {\displaystyle t\mapsto (\cos t, sin t) {\displaystyle t, sin t with parameter $t \in [0, 2\pi)$. {\displaystyle (x,y)=(\cos t, sin t).} The parameter t in this equation would elsewhere in mathematics be called the independent variable. In mathematical analysis, integrals dependent on a parameter are often considered. These are of the form F (t) = $\int x 0(t) x 1(t) f(x;t) dx$. {\displaystyle F(t)=\int _{x_{0}(t)}^{(x;t),dx}.} In this formula, t is the argument of the function F, and on the right-hand side the parameter on which the integral depends. When evaluating the integral, t is held constant, and so it is considered to be a parameter. If we are interested in the value of F for different values of t, we then consider t to be a variable. The quantity x is a dummy variable or variable or variable or variable of integration). Main article: Statistical parameter In statistics and econometrics, the probability framework above still holds, but attention shifts to estimating the parameters of a distribution based on observed data, or testing hypotheses about them. In frequentist estimation theory of statistics, "statistic" or estimator refers to samples, whereas "parameter" or estimand refers to populations, where the sample are taken from. A statistic is a numerical characteristic of the population from which the sample was drawn. For example, the sample mean (estimator), denoted X - {\displaystyle {\overline {X}}}, can be used as an estimate of the mean parameter (estimator), denoted S2, can be used to estimate the variance parameter (estimator), denoted of the population from which the sample was drawn. was drawn. (Note that the sample standard deviation.) It is possible to make statistical inferences without assuming a particular parametric family of probability distributions. In that case, one speaks of non-parametric statistics as opposed to the parametric statistics just described. For example, a test based on Spearman's rank correlation coefficient would be called non-parametric since the statistic is computed from the rank-order of the data disregarding their actual values (and thus regardless of the distribution they were sampled from), whereas those based on the Pearson product-moment correlation coefficient are parameter known as the population correlation. These traces all represent Poisson distributions, but with different values for the parameter known as the population correlation. belonging to a family of probability distributions, distinguished from each other by the values of a finite number of parameters. For example, one talks about "a Poisson distribution with mean value λ ". The function defining the distribution (the probability mass function) is: f (k; λ) = $e - \lambda \lambda k k!$. {\displaystyle f(k;\lambda) = {\frac {e^{-}(-\lambda)} }\lambda ^{k}}. This example nicely illustrates the distinction between constants, parameters, and variables. e is Euler's number of observations of some phenomenon in question, a property characteristic of the system. k is a variable, in this case the number of observations of some phenomenon in question, a property characteristic of the system. k is a variable, in this case the number of observations of some phenomenon in question, a property characteristic of the system. k is a variable, in this case the number of observations of some phenomenon in question, a property characteristic of the system. k is a variable, in this case the number of observations of some phenomenon in question, a property characteristic of the system. occurrences of the phenomenon actually observed from a particular sample. If we want to know the probability of observing k1 occurrences, we plug it into the function to get f (k 1; λ) {\displaystyle f(k {1}; \angle a multiple samples, which will have a range of values of k, but the system is always characterized by the same λ . For instance, suppose we have a radioactive sample that emits, on average, five particles the sample emits over ten-minute periods. The measurements of k, and if the sample behaves according to Poisson statistics, then each value of k will come up in a proportion given by the probability mass function above. From measurement to measurement; if, on the other hand, we modulate the system by replacing the sample with a more radioactive one, then the parameter λ would increase. Another common distribution, i.e. Poisson or normal, and the parameter values, i.e. mean and variance. In such a case, we have a parameterized distribution. It is possible to use the sequence of moments (mean, mean square, ...) or cumulants (mean, variance, ...) as parameters for a probability distribution: see Statistical parameters for a probability distribution: see Statistical parameters for a probability distribution and are referred to as parameters and arguments—or more formally as a formal parameter and an actual parameter. For example, in the definition of a function such as y = f(x) = x + 2, x is the formal parameter (the parameter) of the defined function. When the function is evaluated for a given value, as in f(3): or, y = f(3) = 3 + 2 = 5, 3 is the actual parameter (the parameter) of the defined function. argument) for evaluation by the defined function; it is a given value (actual value) that is substituted for the formal parameter of the defined function. (In casual usage the terms parameter and argument might inadvertently be interchanged, and thereby used incorrectly.) These concepts are discussed in a more precise way in functional programming and its foundational disciplines, lambda calculus and combinatory logic. Terminology varies between languages; some computer languages; some computer and argument as given here, while Eiffel uses an alternative convention. In artificial intelligence, a model are the probability that something will occur. Parameters in a model are the probability that something will occur. weight of the various probabilities. Tiernan Ray, in an article on GPT-3, described parameters this way: A parameter is a calculation in a neural network that applies a great or lesser weighting to some aspect of the data, to give that aspect greater or lesser prominence in the overall calculation of the data. It is these weights that give shape to the data, and give the neural network a learned perspective on the data.[3] In engineering (especially involving data acquisition) the term parameter sometimes the term channel refers to an individual measured item, with parameter referring to the setup information about that channel. "Speaking generally, properties are those physical quantities which directly describe the physical attributes of the system; parameters are those combinations, depending upon the system; parameters are dimensionless, or have the dimension of time or its reciprocal."[4] The term can also be used in engineering contexts, however, as it is typically used in the physical sciences. In environmental science and particularly in chemistry and microbiology, a parameter is used to describe a discrete chemical or microbiology, a parameter is used in engineering contexts. commonly a concentration, but may also be a logical entity (present or absent), a statistical result such as a 95 percentile value or in some cases a subjective value. Within linguistics, the word "parameter" is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal
Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles' and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles' and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles' and Parameters' is almost exclusively used to denote a binary switch in a Universal Grammar within a Principles' and Parameters' is almost exclusively used to denote a binary switch in a Principles' and Parameters' is almost exclusively used to denote a binary switch in a Principles' and Parameters' is almost exclusively and Parameters' is almost exclusively and Parameters' is almost exclusi passed to (or operated on by) an open predicate are called parameters by some authors (e.g., Prawitz's Natural Deduction;[5] Paulson's Designing a theorem prover). Parameters by some authors (e.g., Prawitz's Natural Deduction;[5] Paulson's Designing a theorem prover). avoid variable capture). Others (maybe most) just call parameters passed to (or operated on by) an open predicate variables, and when defining substitution have to distinguish between free variables. Main article: Musical parameter In music theory, a parameter In music theory (a parameter In music theory) and when defining substitution have to distinguish between free variables. from the other elements. The term is used particularly for pitch, loudness, duration, and timbre, though theorists or composers have sometimes considered other musical aspects as parameters. The term is particularly used in serial music, where each parameters may follow some specified series. word "parameter" to this sense, since it is not closely related to its mathematical sense, [6] but it remains common. The term is also common in music production, as the attack, release, ratio, threshold, and other variables on a compressor) are defined by parameters specific to the type of unit (compressor, equalizer, delay, etc.). Coefficient Coordinate system Function parameter Socam's razor (with regards to the trade-off of many or few parameters in data fitting) ^ Bard, Yonathan (1974). Nonlinear Parameter Stimates" researchgate.net. Retrieved 2023-04-12. ^ "OpenAI's gigantic GPT-3 hints at the limits of language models for AI". ZDNet. ^ Trimmer, John D. (1950). Response of Physical Systems. New York: Wiley. p. 13. ^ Prawitz, Dag (2006). Natural Deduction: A Proof-Theoretic Study. Mineola, New York: Dover Publications. ISBN 9780486446554. OCLC 61296001 ^ Lansky, Paul & Perle, George (2001). "Parameter". In Sadie, Stanley & Tyrrell, John (eds.). The New Grove Dictionary of Music and Musicians (2nd ed.). London: Macmillan Publishers. ISBN 978-1-56159-239-5. Retrieved from " 2Real-time text-to-speech AI tool 15.aiScreenshot of the 15.ai web interface on May 23, 2025Type of siteArtificial intelligence speech synthesis, generative artificial intelligenceAvailable inEnglishOwner15Founder(s)15URL15.ai (redirects to 15.dev)CommercialNoRegistrationNoneLaunchedMarch 2020; 5 years ago (2020-03)Current statusActive My Little Pony: Friendship Is Magic Equestria Toyline Cutie mark Spin-offs My Little Pony: Equestria Girls (2013-2020)(List of animations) My Little Pony: Pony Life (2020-2021)(List of episodes) Characters Twilight Sparkle Rainbow Dash Pinkie Pie Applejack Fluttershy Rarity Derpy Hooves Seasons & episodesSeason 1 (2010-2011) "Friendship Is Magic" "The Return of Harmony" "Hearts and Hooves Day' "A Canterlot Wedding" Season 3 (2012-2013) "The Crystal Empire" "Magical Mystery Cure" Season 4 (2013-2014) "Princess Twilight's Kingdom" Season 5 (2015) "The Cutie Map" "Slice of Life" "The Cutie Re-Mark" Season 6 (2016) "A Hearth's Warming Tail" Season 7 (2017) "The Perfect Pear" Season 8 (2018) "Grannies Gone Wild" Season 9 (2019) "The Last Crusade" Series finale MediaFilms & specials My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2017) My Little Pony: The Movie (2018) My Little Pony: The Movie (2017) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2017) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) My Little Pony: The Movie (2018) Collectible card game Other media Home video releases IDW comics Issues My Little Pony/Transformers Fandom 15.ai A Brony Tale Bronies (documentary) Clop Equestria Brony music /mlp/ Online communities Ponysona Them's Fightin' Herds Fan fortion FIMFiction Fallout: Equestria Brony music /mlp/ Online communities Ponysona Them's Fightin' Herds Fan fortion FIMFiction File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Them's Fightin' Herds Fan fortion File Ponysona Ciderfest TrotCon UK PonyCon vte 15.ai is a free non-commercial web application and research project that uses artificial intelligence to generate text-to-speech voices of fictional characters from popular media. Created by a pseudonymous artificial intelligence to generate text-to-speech voices of fictional characters from popular media. undergraduate research at the Massachusetts Institute of Technology, the application allowed users to make characters from video games, television shows, and movies speak custom text with emotional inflections faster than real-time.[a] The platform was notable for its ability to generate convincing voice output using minimal training data—the name "15.ai" referenced the creator's claim that a voice could be cloned with just 15 seconds of audio, in contrast to contemporary deep learning speech models which typically required tens of hours of audio data. It was an early example of an application of generative artificial intelligence during the initial stages of the AI boom. Launched in March 2020, 15.ai gained widespread attention in early 2021 when content utilizing it went viral on social media platforms like YouTube and Twitter, and quickly became popular among Internet fandoms. The service distinguished itself through its support for emotional context in speech generation through emojis, precise pronunciation control through phonetic transcriptions, and multi-speaker capabilities that allowed a single model to generate diverse character voices. 15.ai is credited as the first mainstream platform to popularize AI voice cloning (audio deepfakes) in memes and content creation.[1] Voice actors and industry professionals debated 15.ai's merits for fan creativity versus its potential impact on the profession. While many critics praised the application's accessibility and emotional control, they also noted technical implications, including concerns about reduction of employment opportunities for voice actors, voice-related fraud, and misuse in explicit content. In January 2022, Voiceverse generated audio using 15.ai without attribution and sold it as a non-fungible token (NFT) without permission.[2] News publications universally characterized this incident as Voiceverse having "stolen" voice lines from 15.ai.[3] The service was ultimately taken offline in September 2022 due to legal issues surrounding artificial intelligence and copyright. Its shutdown was followed by the emergence of various commercial alternatives in subsequent years, with their founders acknowledging 15.ai's pioneering influence in the field of deep learning speech synthesis. On May 18, 2025, 15 launched 15.dev, a sequel to the original service that launched after nearly three years of inactivity. For broader coverage of this topic, see Deep learning speech synthesis & History of speech synthesis A
comparison of the alignments (attentions) between Tacotron and a modified variant of Tacotron The field of artificial speech synthesis underwent a significant transformation with the introduction of the seminal paper WaveNet: A Generative Model for Raw Audio marked a pivotal shift toward neural network a based speech synthesis, demonstrating unprecedented audio quality through causal convolutional neural networks. Previously, concatenative synthesis—which worked by stitching together pre-recorded segments of human speech—was the predominant method for generating artificial speech, but it often produced robotic-sounding results at the boundaries of sentences.[4] Two years later, this was followed by Google AI's Tacotron 2 in 2018, which demonstrated that neural networks could produce highly natural speech synthesis but required substantial training data—typically tens of hours of speech, the output quality degraded while still being able to maintain intelligible speech, and with just 24 minutes of training data, Tacotron 2 failed to produce intelligible speech. [5] The same year saw the emergence of HiFi-GAN, a generative adversarial network (GAN)-based vocoder that improved the efficiency of waveform generation while producing highfidelity speech,[6] followed by Glow-TTS, which introduced a flow-based approach that allowed for both fast inference and voice style transfer capabilities.[7] Chinese tech companies also made significant contributions to the field, with Baidu and ByteDance developing proprietary text-to-speech frameworks that further advanced the technology, though specific technical details of their implementations remained largely undisclosed.[8] [...] The website has multiple purposes. It serves as a proof of concept of a platform that allows anyone to create content, even if they can't hire someone to voice their projects. It also demonstrates the progress of my research in a far more engaging manner – by being able to use the actual model, you can discover things about it that even I wasn't aware of (such as getting characters to make gasping noises or moans by placing commas in between certain phonemes). It also doesn't let me get away with picking and choosing the best results and showing off only the ones that work [...] Being able to interact with the model with no filter allows the user to judge exactly how good the current work is at face value. 15, Hacker News[9] Derpy Hooves reciting the FitnessGram PACER test introduction in a neutral emotion[10] Variation #2 Variation #2 Variation #2 Variation #2 Variation #2 Variation #2 Variation #3 Problems playing these files? See media help. 15.ai was conceived in 2016 as a research project in deep learning speech synthesis by a developer known as "15" (at the age of 18[11]) during their freshman year at the Massachusetts Institute of Technology (MIT) as part of its Undergraduate Research Opportunities Program (UROP).[12] The developer was inspired by DeepMind's WaveNet paper, with development continuing through their studies as Google AI released Tacotron 2 the following year. By 2019, the developer had demonstrated at MIT their ability to replicate WaveNet and Tacotron 2's results using 75% less training data than previously required.[8] The name 15 is a reference to the creator's claim that a voice can be cloned with as little as 15 seconds of data.[13] The developer had originally planned to pursue a doctorate based on their undergraduate research, but opted to work in the tech industry instead after their startup was accepted into the Y Combinator accelerator in 2019. After their startup was accepted into the Y Combinator accelerator in 2019 post on X from the developer, instead of using conventional voice datasets like LJSpeech that contained simple, monotone recordings, they sought out more challenging voice samples that could demonstrate the model's ability to handle complex speech patterns and emotional undertones. [tweet 1] The Pony Preservation Project—a fan initiative originating from /mlp/,[8] 4chan's My Little Pony board, that had compiled voice clips from My Little Pony: Friendship Is Magic-played a crucial role in the implementation. The project's contributors had manually trimmed, denoised, transcribed, and emotion-tagged every line from the show. This dataset provided ideal training material for 15.ai's deep learning model.[8] An example of a multi-speaker embedding. The neural network maps the predicted timestamps to a masked embedding sequence that encodes speaker information. 15.ai was released in March 2020 with a limited selection of characters, including those from My Little Pony: Friendship Is Magic and Team Fortress 2.[14] The system was designed to function efficiently with limited training data—requiring only minutes of clean audio per character, in contrast to the 40+ hours typically needed by traditional deep learning models.[15] To overcome data constraints, the developer employed specific data augmentation techniques to improve generalization, including deliberate introduction of spelling punctuation patterns, and pronunciation distortions during training. [15] Upon its launch, 15. ai was offered as a free [16] and non-commercial [17] service that did not require user registration or user accounts to operate. the synthesized voices under two specific conditions: they must properly credit 15.ai by including the website URL in any posts, videos, or projects using the generated audio;[20] and they were prohibited from mixing 15.ai outputs with other text-to-speech outputs in the same work,[21] to prevent misrepresentation of the technology's capabilities.[22] More voices were added to the website in the following months.[23] A significant technical advancement came in late 2020 with the implementation of a multi-speaker embedding in the deep neural network, enabling simultaneous training of multiple voices rather than requiring individual models for each character voice.[8] This not only allowed rapid expansion from eight to over fifty character voices,[11] but also let the model recognize common emotional patterns across characters, even when certain emotions were missing from some characters' training data.[24] By May 2020, the site had served over 4.2 million audio files to users.[25] In early 2021, the application gained popularity after skits, memes, and fan content created using 15.ai went viral on Twitter, TikTok, Reddit, Twitch, Facebook, and YouTube.[26] At its peak, the platform incurred operations; despite receiving offers from companies to acquire 15.ai and its underlying technology, the website remained independent and was funded out of the personal previous startup earnings of the developer[8]—then aged 23 at the time. See also: Non-fungible token § Plagiarism and fraud A satirical meme representing the "right-click, save as" criticism of NFTs. Critics of Voiceverse pointed out the irony of selling ownership rights to AI voices when they themselves had copied 15.ai's technology without attribution. On January 14, 2022, a controversy ensued after it was discovered that Voiceverse NFT had taken credit for voice lines generated from 15.ai's developer had explicitly stated in December 2021 that they had no interest in incorporating NFTs into their work.[27] Log files showed that Voiceverse had generated audio of characters from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make their own platform[28]—in violation of 15.ai's terms from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make their own platform[28]—in violation of 15.ai's terms from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make their own platform[28]—in violation of 15.ai's terms from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make their own platform[28]—in violation of 15.ai's terms from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make them up to make their own platform[28]—in violation of 15.ai's terms from My Little Pony: Friendship Is Magic using 15.ai, pitched them up to make t of service which explicitly prohibited commercial use and required proper attribution. [29] Voiceverse initially claimed their platform would allow NFT owners to possess commercial rights to AI-generated voices for content creation, in-game chats, and video calls. [30] When confronted with evidence of their misappropriation, Voiceverse claimed that someone in their marketing team used the voice without properly crediting 15.ai[31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their
Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo that they used 15.ai [31] and explained in their Discord server that their marketing team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a partnership demo team had been in such a rush to create a rush to create a partnership demo team had been in such a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to create a rush to c their apology, 15 tweeted "Go fuck yourself,"[34] which went viral, amassing hundreds of thousands of retweets and likes on Twitter in support of the developer.[8] 15 later expressed deeper frustration, writing: "the entire field of vocal synthesis is now being misrepresented by charlatans who are only in it for the money."[21] Avatar of Troy Baker Troy Baker @TroyBakerVA I'm partnering with @VoiceverseNFT to explore ways where together we might bring new tools to new create. We all have a story to tell. You can hate. Or you can create. What'll it be? January 14, 2022[35] Following continued backlash and the plagiarism revelation, voice actor Troy Baker (who had partnered with Voiceverse) faced criticism for supporting an NFT project[36] and his confrontational announcement tone.[37] Baker had described Voiceverse's service as allowing people to "create customized audiobooks, YouTube videos, e-learning lectures, or even podcasts with your favorite voice all without the hassle of additional legal work,"[19] which critics noted raised concerns about potentially replacing professional voice actors with AI.[38] Baker subsequently acknowledged that his original announcement tweet ending with "You can hate. Or you can create. What'll it be?" may have been "antagonistic,"[39] and on January 31, announced he would discontinue his partnership with Voiceverse.[40] The event raised concerns about NFT projects, which critics observed were frequently associated with intellectual property theft and questionable business practices.[41] The incident the AI Incident Database (AIID), cataloging it as an example of "an AI synthetic audio sold as an NFT on Voiceverse's platform [that] was acknowledged by the company for having been created by 15.ai, a free web app specializing in text-to-speech and AI-voice generation, and reused without proper attribution."[42] The controversy was also featured in writer and crypto skeptic Molly White's Web3 Is Going Just Great project, which documented how Baker's partnership announcement and its antagonistic tone exacerbated negative reactions to the NFT initiative.[43] White noted the vague nature of Voiceverse's offering, described only as "provid[ing] you an ownership to a unique voice in the Metaverse, "[44] and noted how the revelation of stolen work from 15.ai further damaged Voiceverse's credibility.[43] Russian educational platform Skillbox listed the incident as an example of fraud in NFTs.[45] Voice actor and YouTube video: "This isn't just one of those things [Voiceverse] can go 'Whoopsies!' on. [They] plagiarized somebody else's work and used that as a means to falsely market the quality of [their] own benefit."[video 1] In a 2024 class action lawsuit filed against LOVO, Inc., court documents alleged that the founders of LOVO also created Voiceverse, with plaintiffs claiming that Voiceverse had "already been found to have stolen technology from [15.ai]".[46] In September 2022, 15.ai was taken offline[47] due to legal issues surrounding artificial intelligence and copyright.[8] In a post on Twitter, 15 suggested a potential future version that would better address copyright concerns from the outset.[8] On May 18, 2025, 15 launched 15.dev as the official sequel to 15.ai.[48][49] Fandom news site Equestria Daily reported that the website included "a dropdown for various emotions you want to generate."[50] Three AIgenerated voice line variations from 15.ai showing their waveforms and respective alignment confidence scores. The platform was non-commercial,[17] had no advertisements, generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated without requiring user registration or accounts.[18] Users generated wi parameters for emotional contextualizers and phonetic transcriptions. Each request produced three audio variations with distinct emotional deliveries sorted by confidence score.[51] Characters from Team Fortress 2 and My Little Pony: Friendship Is Magic, including Twilight Sparkle; GLaDOS, Wheatley, and the Sentry Turret from the Portal series; SpongeBob SquarePants; Kyu Sugardust from HuniePop, Rise Kujikawa from Persona 4; Daria Morgendorffer and Jane Lane from Daria; Carl Brutananadilewski from Aqua Teen Hunger Force; Steven Universe from Steven Universe; Sans from Undertale; Madeline and multiple characters from Celeste; the Tenth Doctor Who; the Narrator from The Stanley Parable; and HAL 9000 from 2001: A Space Odyssey.[52] Out of the over fifty[11] voices available, thirty were of characters like Chell and Gordon Freeman were able to be selected as a joke, and would emit silent audio files when any text was submitted.[53] Characters from Undertale and Celeste did not produce spoken words but instead generated their games' distributions generated by the DeepMoji model. These emoji distributions were displayed on 15.ai as part of its technical metrics and graphs.[55] 15.ai generated audio at 44.1 kHz sampling rate—higher than the 16 kHz standard used by most deep learning text-to-speech systems of that period. This higher fidelity created more detailed audio spectrograms and greater audio resolution, though it also made any synthesis imperfections more noticeable. Users reported using Audacity to downsample any generated audio in order to mask apparent robotic artifacts, though this came at the cost of lower audio quality.[15] The system processed speech faster-than-real-time using customized deep neural networks combined with specialized audio synthesis algorithms.[56] While the underlying technology could produce 10 seconds of audio in less than 10 seconds of processing time (hence, faster-than-real-time), the actual user experience often involved longer waits as the servers managed thousands of simultaneous requests, sometimes taking more than a minute to deliver results.[57] The deep learning model's nondeterministic properties produced variations in speech output, creating different intonations with each generation, similar to how voice actors produce different takes.[58] 15.ai introduced the concept of emotional contextualizers, which allowed users to specify the emotional tone of generated speech through guiding phrases.[59][8] The emotional contextualizer functionality utilized DeepMoji, a sentiment analysis neural network developed at the MIT Media Lab. Introduced in 2017, DeepMoji processed emoji embeddings from 1.2 billion Twitter posts (from 2013 to 2017) to analyze emotional context (specified by a vertical bar), the additional context (specified by a vertical bar), the additional context (specified by a vertical bar) and the
motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified by a vertical bar) and the motional context (specified example, if the input was Today is a great day! I'm very sad., the selected character would speak the sentence "I'm very sad." [62] Certain characters, such as Twilight Sparkle from My Little Pony: Friendship Is Magic, offered preset emotional modes, who had specific options to output text in different emotional states such as "happy".[63] An example of a conversion of the text "daisy bell" into speech, starting from English orthography. English words are parsed as a string of ARPABET phonemes, then is passed through a pitch predictor and a mel-spectrogram generator to generate audio. The application used pronunciation data from Oxford Dictionary, and CMU Pronouncing Dictionary, and CMU Pronouncing Dictionary, the last of which is based on ARPABET, a set of English phonetic transcriptions originally developed by the Advanced Research Projects Agency in the 1970s. For modern and Internet-specific terminology, the system incorporated pronunciation data from user generated content websites, including Reddit, Urban Dictionary, 4chan, and Google.[20] Inputting ARPABET transcriptions was also supported, allowing users to correct mispronunciations. Users could invoke ARPABET transcriptions by enclosing the phoneme string in curly braces within the input box (for example, {AA1 R P AH0 B EH2 T} to specify the pronunciation certainty: green for words found in the existing pronunciation lookup table, blue for manually entered ARPABET pronunciations, and red for words where the pronunciation had to be algorithmically predicted. [20] Later versions of 15.ai introduced multi-speaker capabilities. Rather than training separate models for each voice, 15.ai used a unified model that learned multiple voices simultaneously through speaker embeddings-learned numerical representations that captured each character's unique vocal characteristics.[8] Along with the emotional context conferred by DeepMoji, this neural network architecture enabled the model to learn shared patterns across different characters' emotional expressions and speaking styles, even when individual characters lacked examples of certain emotional contexts in their training data.[24] The platform limited text input to 200 characters per generation, though users could create multiple clips for longer speech sequences.[64] The interface included technical metrics and graphs, which served to highlight the research aspect of the website.[11] The name of the underlying algorithm used by 15.ai was dubbed DeepThroat.[65] As of version v23 of 15.ai, the interface displayed comprehensive model analysis data. The flow and generative adversarial network (GAN) hybrid vocoder and denoiser, introduced in an earlier version, was streamlined to remove manual parameter inputs.[11] Critics described 15.ai as easy to use and generally able to convincingly replicate character voices, with occasional mixed results.[66] Natalie Clayton of PC Gamer wrote that SpongeBob SquarePants' voice was replicated well, but noted challenges in mimicking the Narrator from the The Stanley Parable: "the algorithm simply can't capture Kevan Brighting's whimsically droll intonation."[67] Similarly, Russian gaming website Rampaga reflected that GLaDOS performed exceptionally well since "her voice was originally created to simulate human speech by artificial intelligence," while the Narrator from The Stanley Parable was less convincing due to insufficient training data.[68] Zack Zwiezen of Kotaku reported that "[his] girlfriend was convinced it was a new voice line from GLaDOS' voice actor".[69] Calvin Rugona of gaming news publication Gamezo commented that the tool's simplicity contributed significantly to its widespread adoption, as it allowed anyone online to easily create and save voice clips.[54] Taiwanese newspaper United Daily News also highlighted 15.ai's ability to recreate GLaDOS's mechanical voice, alongside its diverse range of character voice options.[70] Yahoo! News Taiwan reported that "GLaDOS in Portal can pronounce lines nearly perfectly", but also criticized that "there are still many imperfections, such as word limit and tone control, which are still a little weird in some words."[71] Chris Button of AI newsletter Byteside called the ability to clone a voice with only 15 seconds of data "freaky," but also found the tech behind it impressive.[72] Robin Lamorlette of French online magazine Clubic described the technology as "devilishly fun" and noted how Twitter and YouTube were filled with creative content from users experimenting with the tool.[73] The platform's voice generation capabilities were regularly featured on Equestria Daily, a fandom news site dedicated to the show My Little Pony: Friendship Is Magic and its other generations, with documented updates, fan creations, and additions of new character voices.[23] In a post introducing new character additions to 15.ai, Equestria Daily's founder Shaun Scotellaro—also known by his online moniker "Sethisto"—wrote that "some of [the voices] aren't great due to the lack of samples to draw from, but many are really impressive still anyway."[23] Chinese My Little Pony fan site EquestriaCN also documented 15.ai's development, highlighting its various updates, though they criticized some of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[74] Multiple other critics also found the word count limit, prosody options, and English-only nature of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[75] Peter Paltridge of an image of the application.[76] Peter Paltridge of the application.[76] Peter Paltridge of the application.[76] Peter Paltridge of the application.[76] Peter Paltridge of the application.[76] Peter Paltridge of the applicati Superhero News opined that "voice synthesis has evolved to the point where the more expensive efforts are nearly indistinguishable from actual human speech," but also noted that "In some ways, SAM is still more advanced than this. It was possible to affect SAM's inflections by using special characters, as well as change his pitch at will. With 15.ai, you're at the mercy of whatever random inflections you get."[76] Conversely, Lauren Morton of Rock, Paper, Shotgun praised the depth of pronunciation control—"if you're willing to get into the nitty gritty of it".[77] Similarly, Eugenio Moto of Spanish news website Qore.com wrote that "the most experienced of users can change parameters like the stress or the tone."[78] Takayuki Furushima of Den Fami Nico Gamer highlighted the "smooth pronunciations", and Yuki Kurosawa of AUTOMATON noted its "rich emotional expression" as a major feature; both Japanese authors noted the lack of Japanese-language support.[79][80] Renan do Prado of Brazilian gaming news outlet Arkade and José
Villalobos of Spanish gaming outlet LaPS4 pointed out that while users could create amusing results in Portuguese and Spanish respectively, the generation performed best in English.[81] Chinese gaming news outlet GamerSky called the app "interesting", but also criticized the word count limit of the text and the lack of intonations.[82] Frank Park of South Korean video game outlet Zuntata wrote that "the surprising thing about 15.ai is that [for some characters], there's only about 30 seconds of data, but it achieves pronunciation accuracy close to 100%".[83] Machine learning professor Yongqiang Li remarked in his blog that the application was still free despite having 5,000 people generating voices concurrently at the time of writing.[84] Marco Cocomello of South African gaming and pop culture website GLITCHED remarked that despite the 200-character limitation, the results "blew [him] away" when testing the app with GLaDOS's voice.[85] Álvaro Ibáñez of Spanish technology publication Microsiervos wrote that he found the rhythm of the AI-generated voices noteworthy, observing that the system appeared to adapt its delivery based on the content's intended meaning.[86] Technical publications and outlets focusing on artificial intelligence provided more in-depth analysis of 15.ai's capabilities and limitations compared to other text-to-speech technologies of the time.[87] Rionaldi Chandraseta of AI newsletter Towards Data Science observed that voice models trained on larger datasets created more convincing output (44.1 kHz sampling rate) Bai Feng of Chinese tech and AI media outlet XinZhiYuan on QQ News highlighted the technical achievement of 15.ai's high-quality output (44.1 kHz sampling rate) despite using minimal training data, remarking that this was of significantly higher quality than typical deep learning text-to-speech implementations which used 16 kHz sampling rates. The outlet also acknowledged that while some pronunciation errors occurred due to the limited training data, this was understandable given that traditional deep learning text-to-speech implementations which used 16 kHz sampling rates. models typically required 40 or more hours of training data.[88] Similarly, Parth Mahendra of AI newsletter AI Daily observed that while the system "does a good job at accurately replicating most basic words," it struggled with more complex terms, noting that characters would "absolutely butcher the pronunciation" of certain words.[25] Ji Yunyo of Chinese tech news website NetEase News called the technology behind 15.ai "remarkably efficient," requiring only minimal data to accurately clone numerous voices while maintaining emotional nuance and natural intonation. However, he also pointed out limitations, noting that the emotional expression was relatively "neutral" and that "extreme" emotions couldn't be properly synthesized, making it less suitable for not safe for work applications.[89] Ji also mentioned that while many deepfake videos required creators to extract and edit material from hours of training data per character, though server performance issues often meant synthesis could take over a minute to complete.[90] Ellen McLain (voice of GLaDOS in Portal) and John Patrick Lowrie (voice of the Sniper in Team Fortress 2) were interviewed on The VOC Podcast in 2021 about their perspectives on 15.ai and AI voice synthesis technology. Some voice actors whose characters appeared on 15.ai have publicly shared their thoughts about the platform. In a 2021 interview on video game voice acting podcast The VOC, John Patrick Lowrie-who voices the Sniper in Team Fortress 2-explained that he had discovered 15.ai when a prospective intern showed him a skit she had created using AI-generated voices of the Sniper and the Spy from Team Fortress 2. Lowrie commented: "The technology still has a long way to go before you really believe that these are just human beings, but I was impressed by how much [15.ai] could do. You certainly don't get the delivery that you get from an actual person who's analyzed the scene, [...] but I do think that as a fan source -for people wanting to put together mods and stuff like that-that it could be fun for fans to use the voice of characters they like." He drew an analogy to synthesized music, adding: "If you want the sound of a choir, and you want the sound of a choir, and you want the sound of a choir, and you want the sound of a choir and source of characters they like." He drew an analogy to synthesized music, adding: "If you want the sound of a choir, and you want the sound of a choir, and you want the sound of a choir and source of characters they like." He drew an analogy to synthesized music, adding: "If you want the sound of a choir, and you want the sound of a choir and source of characters they like." He drew an analogy to synthesized music, adding: "If you want the sound of a choir and source of characters they like." He drew an analogy to synthesized music, adding: "If you want the sound of a choir, and you want the sound of a choir and source of characters they like." He drew an analogy to synthesized music, adding: "If you want the source of characters they like." He drew an analogy to synthesized music, adding: "If you want the source of characters they like." He drew an analogy to synthesized music, adding: "If you want the source of characters they like." 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He drew an analogy to synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized music, adding the synthesized m have something that sounds pretty nice; but it's not the same as a choir and an orchestra."[video 2] In a 2021 live broadcast on his Twitch channel, Nathan Vetterlein—the voice actor of the Scout from Team Fortress 2—listened to an AI recreation of his character's voice. He described the impression as "interesting" and noted that "there's some stuff in there."[video 3] See also: Deepfake § Concerns and countermeasures Other voice actors had mixed reactions to 15.ai's capabilities. While some industry professionals acknowledged the technical innovation, others raised concerns about the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for their professionals acknowledged the technology's implications for thein professionals acknowledged the Voiceverse NFT, which had misappropriated 15.ai's technology, it sparked widespread controversy within the voice acting industry.[92] Critics raised concerns about automated voice impersonation, and potential misuse in explicit content.[58] Ruby Innes of Kotaku Australia noted, "this practice could potentially put voice actors out of work considering you could just use their AI voice rather than getting them."[19] In her coverage of the Voiceverse controversy, Edie WK of Checkpoint Gaming raised the concern that "this kind of technology has the potential to push voice actors out of work if it becomes easier and cheaper to use AI voices instead of working with the actor directly."[94] While 15.ai limited its scope to fictional characters and did not reproduce voices of real people or celebrities,[20] computer scientist Andrew Ng noted that similar technology could be used to do so, including for nefarious purposes. In his 2020 assessment of 15.ai, he wrote: "Voice cloning could be enormously productive. In Hollywood, it could revolutionize the use of virtual actors. In cartoons and audiobooks, it could revolutionize the use of virtual actors. In cartoons and audiobooks, it could revolution to lessons delivered by the voice of favorite personalities And how many YouTube how-to video producers would love to have a synthetic Morgan Freeman narrate their scripts? While discussing potential risks, he added: "...but
synthesizing a human actor's voice without consent is arguably unethical and possibly illegal. And this technology will be catnip for deepfakers, who could scrape recordings from social networks to impersonate private individuals."[95] A January 2021 CNN broadcast showing a fan edit that used 15.ai to replace Donald Trump's Home Alone 2 cameo with the Heavy Weapons Guy from Team Fortress 2 15.ai was an early pioneer of audio deepfakes, leading to the emergence of AI speech synthesis-based memes during the initial stages of the AI boom in 2020. 15.ai is credited as the first mainstream platform to popularize AI voice cloning in Internet memes and content creation,[1] particularly through its ability to generate convincing character voices in real-time without requiring extensive technical expertise.[96] The platform's impact was especially notable in fan communities, including the My Little Pony: Friendship Is Magic, Portal, Team Fortress 2, and SpongeBob SquarePants fandoms, where it enabled the creation of viral content that garnered millions of views across social media platforms like Twitter and YouTube.[97] Team Fortress 2 content creators also used the platform to produce both short-form memes and complex narrative animations using Source Filmmaker. Fan creations included skits and new fan animations[20] (such as the popular Team Fortress 2 Source Filmmaker video Spy's Confession[11]), crossover content—such as Game Informer writer Liana Ruppert's demonstration combining Portal and Mass Effect dialogue in her coverage of the platform[98]recreations of viral videos (including the infamous Big Bill Hell's Cars car dealership parody[99]), adaptations of fanfiction using AI-generated character voices (such as The Tax Breaks, a fully voiced 17-minute fan-made episode of Friendship Is Magic),[100] music videos and new musical compositions—such as the Team Fortress 2 remix Pootis Hardbass[11]—and content where characters recited sea shanties.[101] Some fan creations gained mainstream attention, such as a viral edit replacing Donald Trump's cameo in Home Alone 2: Lost in New York with the Heavy Weapons Guy's AI-generated voice, which was featured on a daytime CNN segment in January 2021.[102] Some users integrated 15.ai's voice synthesis with VoiceAttack, a voice command software, to create personal assistants.[103] The Tax Breaks is a 17-minute fan-made episode of Friendship Is Magic produced using character voices from 15.ai. Its influence has been noted in the years after it became defunct,[104] with several commercial alternatives emerging to fill the void, such as ElevenLabs[b] and Speechify.[106] Contemporary generative voice AI companies have acknowledged 15.ai's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering role. Y Combinator startup PlayHT called the debut of 15.ai 's pioneering cloning popular for content creation by being the first [...] to feature popular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai was transformative in the field of AI text-to-speech.[109] At brony conventions, 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai was transformative in the field of AI text-to-speech.[109] At brony conventions, 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai was transformative in the field of AI text-to-speech.[109] At brony conventions, 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai was transformative in the field of AI text-to-speech.[109] At brony conventions, 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai has been discussed in presentations on the intersection of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai has been discussed in presentation of the My Little Ponyular existing characters from fandoms".[108] Mati Staniszewski, co-founder and CEO of ElevenLabs, wrote that 15.ai has been discussed in presentation of the My Little Ponyular existing characters from fandoms [108] Mati Staniszewski, co-founder and [108] Mati Staniszewski, co-founder and [108] Mati fandom and artificial intelligence.[110] Prior to its shutdown, 15.ai established several technical precedents that influenced subsequent developments in AI voice synthesis. Its integration of DeepMoji for emotional analysis demonstrated the viability of incorporating sentiment-aware speech generation,[111] while its support for ARPABET phonetic transcriptions set a standard for precise pronunciation control in public-facing voice synthesis tools.[8] The platform's unified multi-speaker model, which enabled simultaneous training of diverse character voices, proved particularly influential. This approach allowed the system to recognize emotional patterns across different voices even when certain emotions were absent from individual character training sets; for example, if one character had examples, while another had angry but no joyful speech but no angry examples, the system could learn to generate both emotions for both characters by understanding the common patterns of how emotions affect speech. [24] 15.ai also made a key contribution in reducing training data requirements for speech synthesis. Earlier systems like Google AI's Tacotron and Microsoft Research's FastSpeech required tens of hours of audio to produce acceptable results and failed to generate intelligible speech with less than 24 minutes of training data.[5][112] In contrast, 15.ai demonstrated the abilit to generate speech with substantially less training data—specifically, the name "15.ai" refers to the creator's claim that a voice could be cloned with just 15 seconds of data.[113] This approach to data efficiency influenced subsequent developments in AI voice synthesis technology, as the 15-second benchmark became a reference point for subsequent developments in AI voice synthesis technology. voice synthesis systems. The original claim that only 15 seconds of data is required to clone a human's voice was corroborated by OpenAI in 2024.[114] AI boom Character.ai Deepfake Ethics of artificial intelligence WaveNet My Little Pony: Friendship Is Magic fandom Synthetic media ^ The term "faster than real-time" in speech synthesis means that the system can generate audio more quickly than the actual duration of the speech—for example, generating 10 seconds of speech in less than 10 seconds of speech in less than 10 seconds would be considered faster than real-time. ^ which uses "11.ai" as a legal byname for its web domain[105] ^ a b Cocomello 2021: "However, back then if you wanted to create your own dialogue, it required layers of sound enhancements and tweaks. Thankfully, the world has evolved and now thanks to the 15.ai app, we can make [...] popular characters say whatever we want" MrSun 2021: 大家是否都曾經想像過, 假如能讓自己喜歡的遊戲或是動畫角色說出自己想聽的話, 不論是名字、惡搞或是經典名言, 都是不少人的夢想吧。不過來到 2021 年, 現在這種夢想不再是想想 而已,因為有一個網站通過 AI 生成的技術, (transl. Have you ever imagined what it would be like if your favorite game or anime characters could say exactly what you want to hear? Whether it's names, parodies, or classic quotes, this is a dream for many. However, as we enter 2021, this dream is no longer just a fantasy, because there is a website that uses AI-generated technology,). Anirudh VK 2023: "While AI voice memes have been around in some form since '15.ai' launched in 2020, [...]" Wright 2023: "AI voice tools used to create "audio deepfakes" have existed for years in one form or another, with 15.ai being a notable example." Weitzman 2023: "It gained popularity because it was the first AI voice platform that featured an assortment of fictional characters from a variety of media sources" Temitope 2024: "During this period, 15.ai earned credit for single-handedly popularizing AI voice cloning—often described as 'audio deepfakes'—in memes, viral content, and fan-driven media." Abisola 2025: "Many credit 15.ai as the first mainstream text-tospeech platform that truly made 'audio deepfakes' go viral," ^ a b Lam 2022: "Voiceverse har nu indrømmet, efter en masse beskyldninger, at de har stjålet, og solgt, AI-baseret stemmeskuespil som NFT'er baseret på en stemme opfundet og designet af en tjeneste ved navn 15.ai." (transl. "Voiceverse has now admitted, after a lot of accusations, that they have stolen, and sold, AI-based voice acting as NFTs based on a voice invented and designed by a service called 15.ai.") Parker 2022: "VoiceverseNFT previously admitted to selling voice content stolen from fifteenAI" Phillips 2022: "Indeed, log files apparently showed Voiceverse NFT had used 15.ai for an AI-powered voice to be sold as a unique token.") ^ a b Lawrence 2022: "It was revealed that [Voiceverse] had stolen voice work it'd been
using." Wright 2022: "Voiceverse NFT (...] admitted to using content without permission from 15.ai" Innes 2022: "Voiceverse NFT had taken voice lines from [15.ai] without giving credit" Toh 2022: "Voiceverse NFT had taken voice lines from [...] admitted to using content without permission from 15.ai" Carcasole 2022: "Voiceverse NFT had taken voice lines from [...] admitted to using content without permission from 15.ai" Carcasole 2022: "Voiceverse NFT had taken voice lines from [...] admitted to using content without permission from [...] admitted to using content without permission from 15.ai" Carcasole 2022: "Voiceverse NFT had taken voice lines from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using content without permission from [...] admitted to using co Beckwith 2022: "NFT firm Voiceverse admits it stole work" Muropaketti 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting without permission") Anikó 2022: "Voiceverse] used [15.ai's] voice acting witho now admitted [...] that they stole") Aktaş 2022: "Troy Baker-backed NFT firm admitted using voice lines from [15.ai] without crediting it from [...] 15.ai" Skorich 2022: "Komпанию уличили в воровстве в тот же день, когда актёр объявил о сотрудничестве" (transl. the company was caught stealing on the same day the actor announced his partnership) Piletsky 2022: "Bcкope в тот же день Voiceverse NFT yличили в воровстве." (transl. "Shortly after that same day, Voiceverse NFT was caught stealing.") Lopez 2022: "Voiceverse NFT was caught stealing.") estaría intentando sacarle partido al comercializar una muestra [...] sin el permiso de su autor" (transl. "the aforementioned NFT company would be trying to take advantage of it by marketing a sample [...] without the permission of its author.") ^ Barakat, Turk & Demiroglu 2024. ^ a b Google 2018 ^ Kong, Kim & Bae 2020. ^ Kim et al. 2020. ^ a b c d e fghijkl Temitope 2024. ^ Hacker News 2022 ^ "Examples". May 15, 2025. A b c d e fg Abisola 2025. ^ Ab c d e fg Abisola 2025. ^ Chandraseta 2021; Li 2021; Ji 2021; Temitope 2024. ^ a b C eng 2020. ^ Clayton 2021: "But thanks to a free online machine-learning tool," Oxton 2021: "Благодаря бесплатному онлайн-инструменту, основанному на машинном обучении" (transl. "A free online tool powered by machine learning") Paltridge 2021: "It's 15.ai, a free website is more than 5,000 online, but it is currently completely free.") Lam 2022: "15.ai, a free web app specializing in text-to-speech and AI-voice generation" Toh 2022: "15.ai, a free-to-use AI that can accurately clone voices," ^ a b Williams 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech and AI-voice generation" Toh 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." Wright 2022: "15.ai, a free-to-use text-to-speech service." 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"You just have to enter, select GlaDOS from the list of available characters,") do Prado 2021: "Para usar o programa é bem simples, acesse-o CLICANDO AQUI, e nas barras de opções é só escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde quer a voz, escolher o game/desenho/seriado de onde e the voice from, choose the character and type.) ^ a b c Innes 2022. ^ a b c d e Kurosawa 2021. ^ a b Beckwith 2022. ^ "About". 15.ai (Official website). March 2, 2020. Archived from the original on March 3, 2020. Retrieved December 23, 2024. ^ a b c d Scotellaro 2020b. ^ a b c d Scotellaro 2020b. ^ a b c d
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Carcasole 2022; Carcasole 2022; Carcasole 2022; Carcasole 2022; Carcasole 2022; Carcaso 1:24-cv-03770, 38 (S.D.N.Y. 2024) ("Separately, VoiceVerse has already been found to have stolen technology from another company. See Ule Lopez, WCCF Tech, "Voiceverse NFT Service Reportedly Uses Stolen Technology from 15ai," (Jan. 16, 2022),). ^ Staniszewski 2024; Gigonway 2023. ^ "FAQ". 15.dev. May 18, 2025. Retrieved May 18, 2025. @fifteenai (May 18, 2025). "We are so back. Only MLP characters, features, and improvements will be added soon. Check Twitter and/or the Discord server (linked on the website) for updates! (Expect possible downtime as I calibrate server capacity and GPU allocations depending on how busy the website gets.)" (Tweet). Retrieved May 18, 2025 - via Twitter. ^ Scotellaro 2025. ^ Ibáñez 2022; Menor 2021; Clayton 2021; Rugona 2021; Clayton 2021; Rugona 2021; Rugona 2021; Rugona 2021; Rugona 2021; Rugona 2021; Cocomello 2021; Rugona 2021; Clayton 2021; Rugona 2021; Cocomello 2021; Rugona 2021; Clayton 2021;
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'text 1|text 2' will produce a voice line of text 1 with the emotion of text 2." ^ Chandraseta 2021: "because it could force the bot into generating previously unknown data, such as saying 'Today is a great day' with a sad or angry emotion" ^ Mahendra 2020: "For example, Twilight Sparkle from My Little Pony has the option of outputting the written text in a happy mode." ^ Cocomello 2021; Ruppert 2021. ^ Clayton 2021; Ruppert 2021; Ruppert 2021; Cocomello 2021; Ruppert 2021; Cocomello 2021; Coco симуляции человеческой речи искусственным интеллектом. Увы, но всех диалогов Pacckaзчика из The Stanley Parable недостаточно, чтобы AI научился подражать причудливой интонации Kebana Брайтинга." (transl. "Some characters sound better than others. GLaDOS is the best at this task, as her voice was originally created to simulate human speech by artificial intelligence. Unfortunately, all the dialogue from The Stanley Parable's Narrator isn't enough for the AI to learn to imitate Kevan Brighting's quirky intonation.") ^ Zwiezen 2021. ^ 遊戲 2021: "目前「15.ai」的網頁上,提供了不少的音源, [...]除了《傳送門》之外, 15.ai 網站目前也支援了許多來自遊戲、電影或動畫中的人物語音, " (transl. "Currently, the "15.ai" website provides a lot of audio sources. [...] In addition to "Portal", the 15.ai website currently also supports voices for many characters from games, movies or animations. ^ MrSun 2021: "的 GLaDOS 也能完美的唸出任何台詞。當然網站也補充目前還有很多不完美的地方,像是字數限制、語氣控制在某些話上還是略有怪異,但只要肯花時間,也能像是 其他網友一樣,通過剪輯來完成有趣的創作, " (transl. "Even GLaDOS in "Portal" can perfectly recite any lines. Of course, the website also added that there are still a bit weird in some words, but as long as you are willing to spend time, you can also complete interesting creations through editing like other netizens.") ^ Button 2021. ^ Lamorlette 2021: "On peut donc retrouver sur ces réseaux de nombreux exemples de ce que peut donner le mélange entre un esprit créatif et une technologie aussi efficace que diablement amusante." (transl. "These social networks are therefore full of examples of what can be achieved by combining a creative mind with technology that is as effective as it is devilishly fun.") ^ www.equestriacn.com 2021. ^ Paltridge 20 parameters like the stress or tone.") ^ Furushima 2021: 日本語入力には対応していないが、ローマ字入力でもなんとなくそれっぽい発音になる。; 15.aiはテキスト読み上げサービスだが、特筆すべきはそのなめらかな発音と、ゲームに登場するキャラクター音声を再現している点だ。 (transl. It does not support Japanese input, but even if you input using romaji, it will somehow give you a similar pronunciation.; 15.ai is a text-to-speech service, but what makes it particularly noteworthy is its smooth pronunciation and the fact that it reproduces the voices of characters that appear in games.) ^ Kurosawa 2021: "もうひとつ15.aiの大きな特徴として挙げられるのが、豊かな感情表現だ" (transl. "Another major feature of 15.ai is its rich emotional expression.") Kurosawa 2021: "英語版ボイスのみなので注意" (transl. "Please note that this is an English voice only version.") ^ do Prado 2021: "Obviamente o programa funciona no idiomas falando em português," (transl. "Obviously, the program works in English, but you can generate some really confusing and funny sentences in Portuguese, like those memes using voices in other languages speaking Portuguese.") Villalobos 2021: "En este sentido, en las últimas horas se ha hecho popular un sitio web que emula la voz de GlaDOS para que diga todas las palabras que quieras, siempre y cuando estén en inglés, aunque puedes escribir algo en español e intentará pronunciarlo, pero no lo hará correctamente." (transl. "In this sense, in recent hours a website has become popular that emulates the voice of GlaDOS so that it says all the words you want, as long as they are in English, although you can write something in Spanish and it will try to pronounce it, but it will not do it correctly.") ^ GamerSky 2021: "虽然AI的声音缺少了些抑扬顿挫,不过效果也还算有趣。" (transl. "Although the AI's voice lacks some intonation, the effect is still interesting.") GamerSky 2021: "目前15.ai提供的角色选项较少, 由于文本的字数限制, 生成的语音也相对较短" (transl. "Currently, 15.ai provides relatively few character options, and due to the word limit of the text, the generated voice is relatively short.") ^ Park 2021: "15.ai 가 30 가 100% 가 " (transl. "[...] what's amazing about 15.ai is that the data is close to 30 seconds long, but it achieves pronunciation accuracy close to 100%.") ^ Li 2021: "该网站的访问量为在线任务差不多5000以上,而且目前完 全免费, " (transl.: "The number of requests to the website is more than 5,000 tasks, and it is still currently completely free.") ^ Cocomello 2021. ^ Ibáñez 2022: "Personalmente encontré interesantes las pausas y el ritmo y que ciertamente se nota que según el contenido del texto se «interpreta» el resultado según lo que se intenta transmitir." (transl.: "Personally, I found the pauses and rhythm interesting, and that it is certainly noticeable that depending on the content of the text, the result is 'interpreted' according to what is being trying to convey.") ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Wahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng 2020; Mahendra 2020; Ji 2021. ^ Feng
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"The audio files generated by this tool have a sampling rate of 16,000 Hz, while most deep learning-based text-to-speech implementations use a sampling rate of 16,000 Hz. Therefore, the audio generated by it will have a more detailed sound spectrum (higher quality audio), but the defects will be more obvious.") Feng 2020: "当然在这么小的语料上训练的模型也是有缺陷的,有些单词可能发音不准确,其实这也很好理解,即使是人,在遇到生词的时候也不一定能准确发音,而传统的深度模型通常有 40个小时或者更多的语料,所以错误率会低一些。" (transl. "Of course, the model trained on such a small corpus is also flawed, and some words may not be pronounced correctly. In fact, this is easy to understand. Even humans may not be able to pronounce new words accurately when they encounter them. Traditional deep models usually have 40 hours or more of corpus, so the error rate will be lower.") ^ Ji 2021: "但是由于情绪表现只能联系上下文进行自动识别, 导致这些语音在情感表达上比较"中庸", 一些"极 端"的情绪无法通过语音合成正常表达,[...]距离其被正式用于某些NSFW的同人作品,还有很长的路要走。" (transl. "the emotional expression can only be automatically recognized in the context, which makes these voices relatively "neutral" in emotional expression. Some "extreme" emotions cannot be expressed normally through voice synthesis. [...] it still has a long way to go before it can be officially used in some NSFW fan works.") ^ Ji 2021: "网友在油管上看到的许多"深度伪造"视频,都依赖视频创作者从原本数小时的数据资料里进行提取编辑,最终才能制作非常简短的内容,并且呈现效果还很一般。而15.ai的开发者表示,自己的这项技术可以轻松实现那些视频效果(事实上15.ai的许多角色进行深度学习的数据时长只有几十分钟)。" (transl. "Many of the "deep fake" videos that netizens see on YouTube rely on video creators to extract and edit hours of data to produce very short content, and the presentation effect is still very average. The developers of 15.ai is only tens of minutes long).") ^ Parker 2022; Temitope 2024. ^ Parker 2022; Skorich 2022; Piletsky 2022; Enriquez 2022. ^ Innes 2022; Kar 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2022. ^ W-K 2

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