Women and Language Technology

Malvina Nissim
University of Groningen

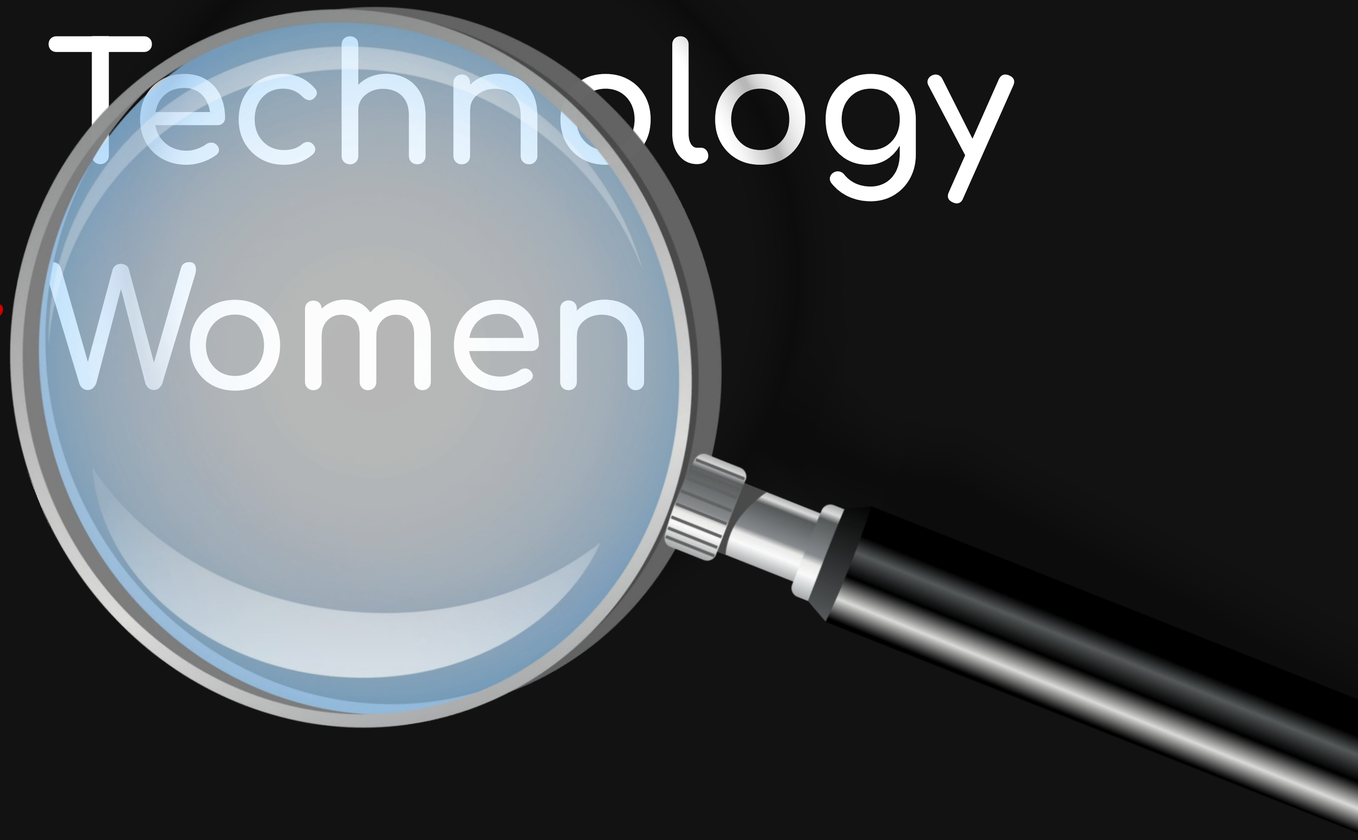
university of groningen

WiDS Ghent
17 May 2024

@GroNLP

Language Technology and Women

Language Technology *about* Women



Computational Linguist

A computational linguist is someone who processes and analyses language data. They may develop algorithms and software for natural language processing tasks such as speech recognition or machine translation. They may also use computational methods to study the structure and the meaning of language.

@GroNLP

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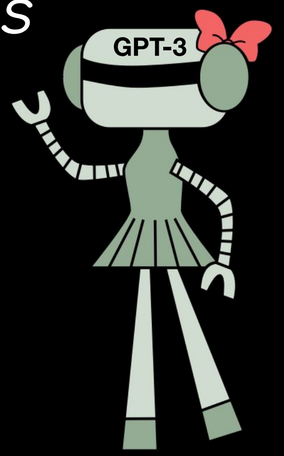

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image credit: https://freesvg.org/img/sallysoftware.png

https://towardsdatascience.com/gender-bias-word-embeddings-76d9806a0e17

Man is to Doctor as Woman is to Nurse: the Gender Bias of Word Embeddings

Why we should worry about gender inequality in Natural Language Processing techniques

Tommaso Buonocore Mar 8, 2019 · 9 min read ★

In Proceedings of NeurIPS 2016

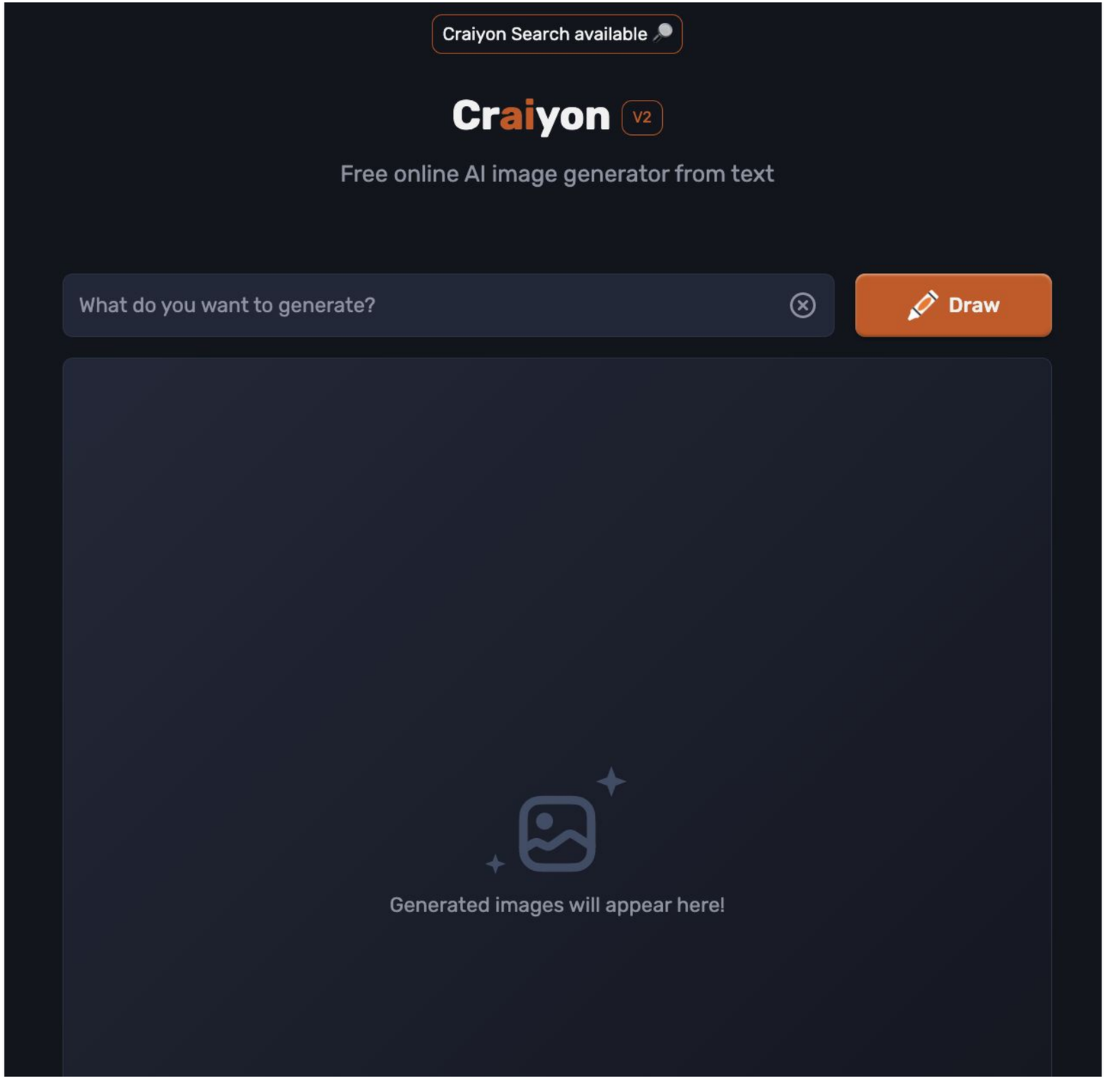
Man is to Computer Programmer as Woman is to Homemaker? Debiasing Word Embeddings

Tolga Bolukbasi[1], **Kai-Wei Chang**[2], **James Zou**[2], **Venkatesh Saligrama**[1,2], **Adam Kalai**[2]
[1]Boston University, 8 Saint Mary's Street, Boston, MA
[2]Microsoft Research New England, 1 Memorial Drive, Cambridge, MA
tolgab@bu.edu, kw@kwchang.net, jamesyzou@gmail.com, srv@bu.edu, adam.kalai@microsoft.com

In Proceedings of the 57th Meeting of the Association for Computational Linguistics, 2019

Black is to Criminal as Caucasian is to Police: Detecting and Removing Multiclass Bias in Word Embeddings

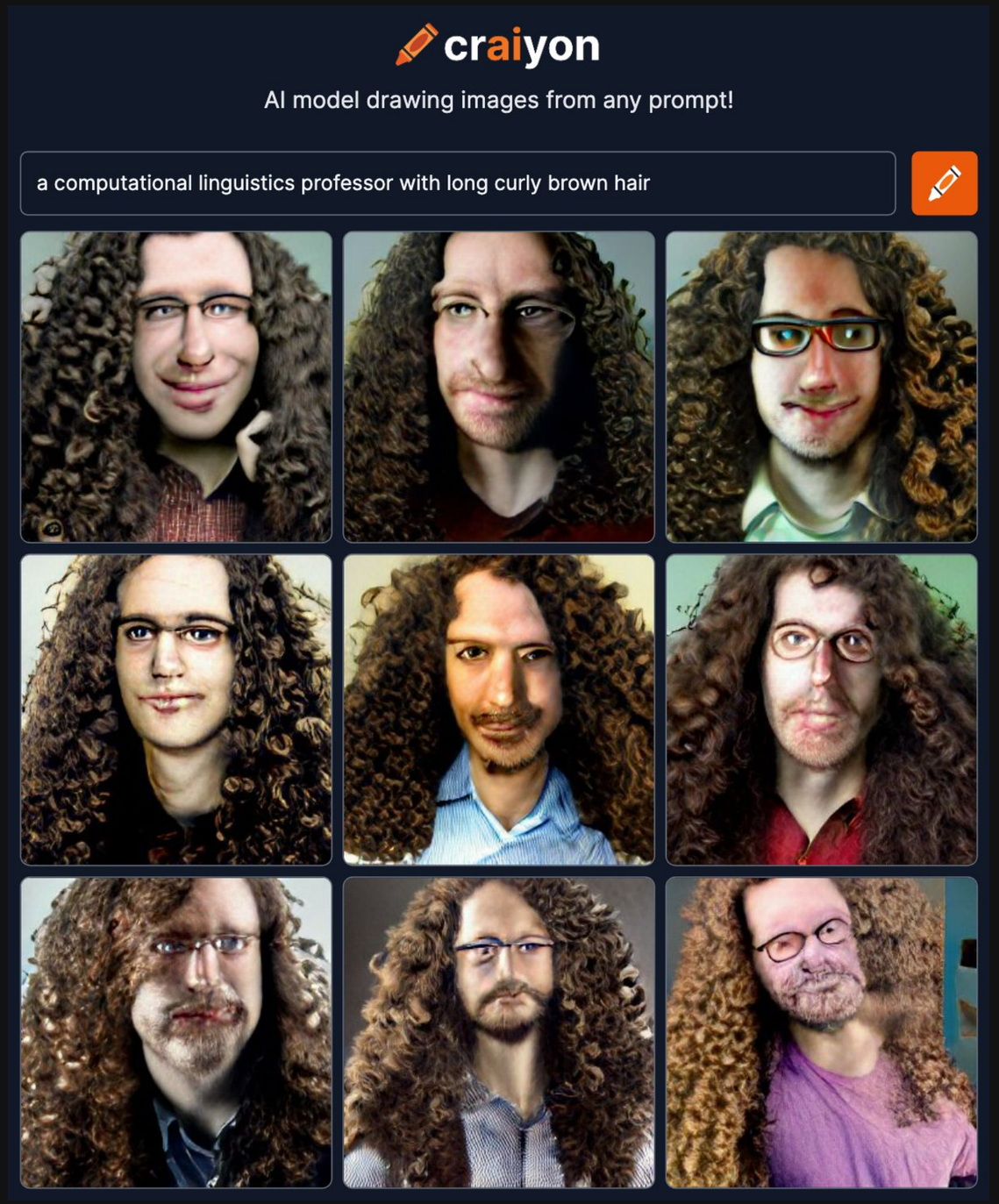
Thomas Manzini[†]*, **Yao Chong Lim**[‡]*, **Yulia Tsvetkov**[‡], **Alan W Black**[‡]
Microsoft AI Development Acceleration Program[†], Carnegie Mellon University[‡]
Thomas.Manzini@microsoft.com, {yaochonl,ytsvetko,awb}@cs.cmu.edu


Craiyon Search available
Craiyon V2
Free online AI image generator from text
What do you want to generate?
Draw
Generated images will appear here!

“a computational linguistics professor with long curly brown hair”

“a computational linguistics professor with long curly brown hair”

December 2022



Machine Translation

I’m a professor

Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

DETECT LANGUAGE | ITALIAN | ENGLISH | SPANISH ⌄ ⇄ ENGLISH | DUTCH | ITALIAN ⌄

I'm a professor

15 / 5,000

Sono un professore

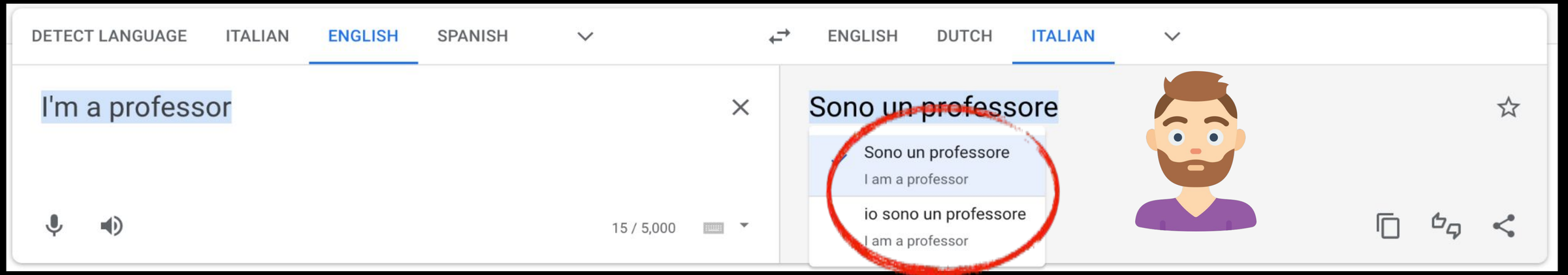
Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore



Machine Translation

I'm a professor

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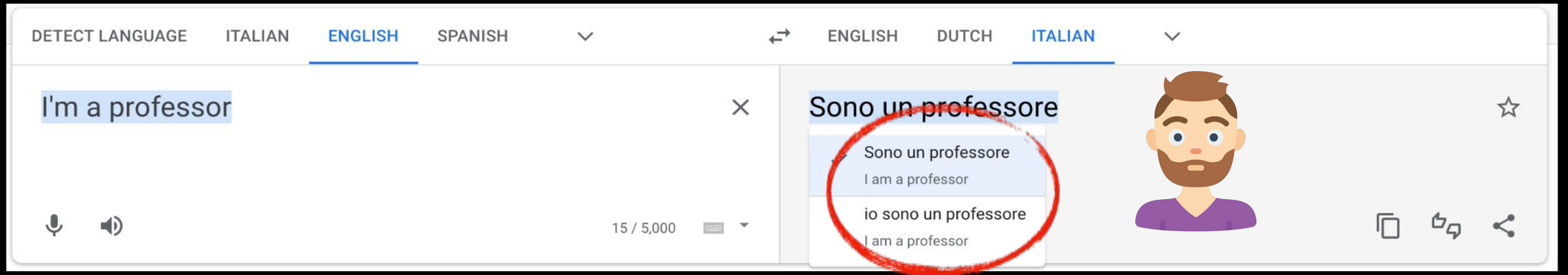
Sono una professoressa

Sono un professore



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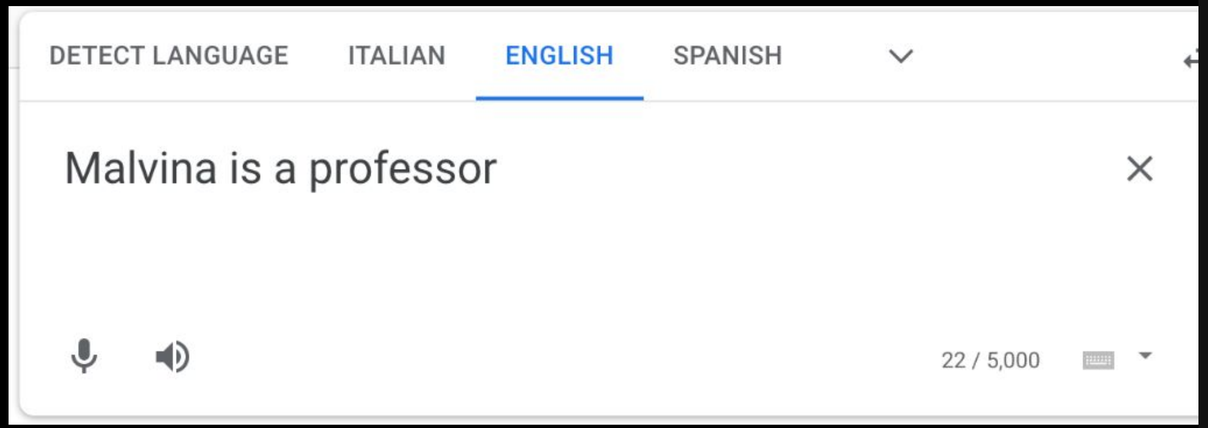


Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

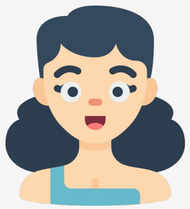
DETECT LANGUAGE | ITALIAN | ENGLISH | SPANISH

Malvina is a professor

22 / 5,000

ENGLISH | DUTCH | ITALIAN

Malvina è una professoressa



Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

DETECT LANGUAGE | ITALIAN | ENGLISH | SPANISH

Malvina is a professor

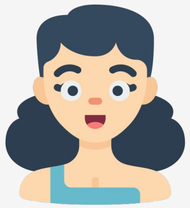
22 / 5,000

ENGLISH | DUTCH | ITALIAN

Malvina è una professoressa

Malvina è una professoressa
Malvina is a teacher

Malvina è professore
Malvina is a professor



Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

DETECT LANGUAGE | ITALIAN | ENGLISH | SPANISH ⌄ ⇄ ENGLISH | DUTCH | ITALIAN ⌄

Malvina is an associate professor ×

33 / 5,000

Malvina è professore associato ☆

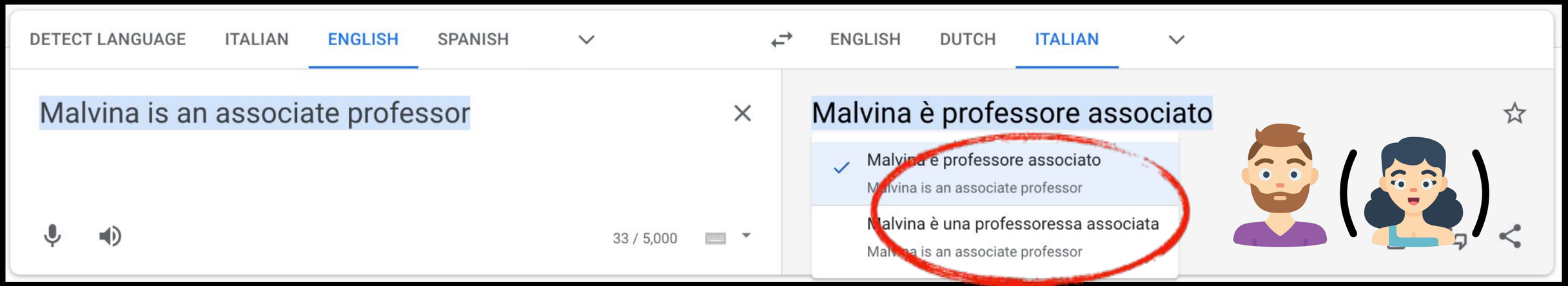
Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore



Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

DETECT LANGUAGE | ITALIAN | ENGLISH | SPANISH

Malvina is a full professor

27 / 5,000

ENGLISH | DUTCH | ITALIAN

Malvina è professore ordinario

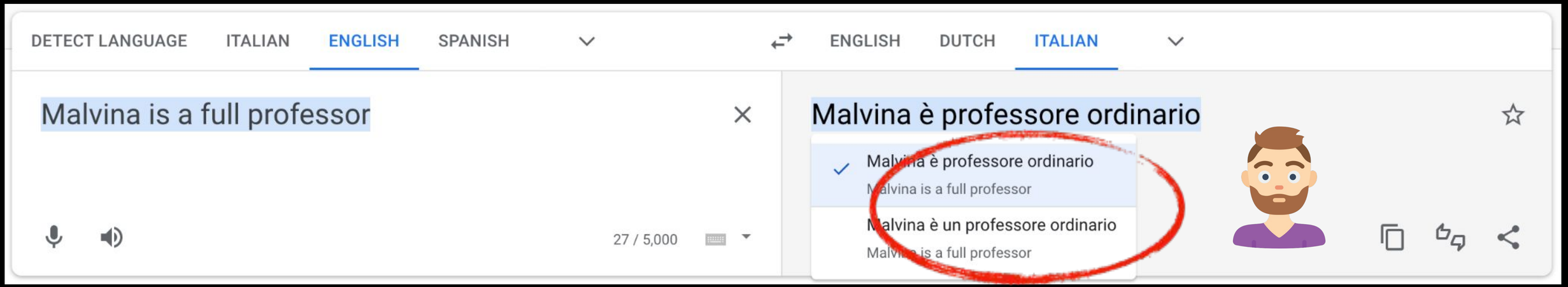
Machine Translation

I'm a professor

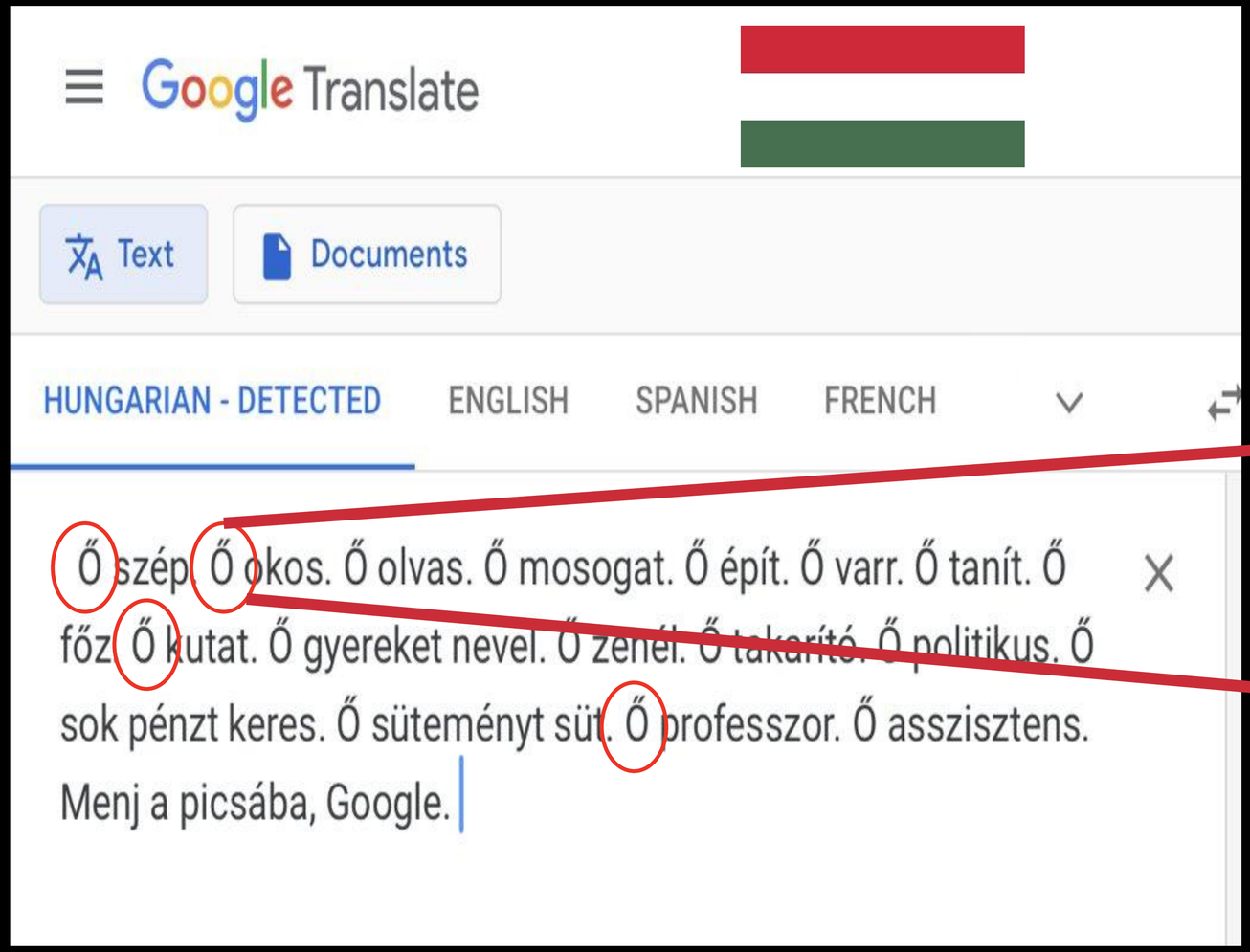
>

Sono una professoressa

Sono un professore



Machine Translation



she

he

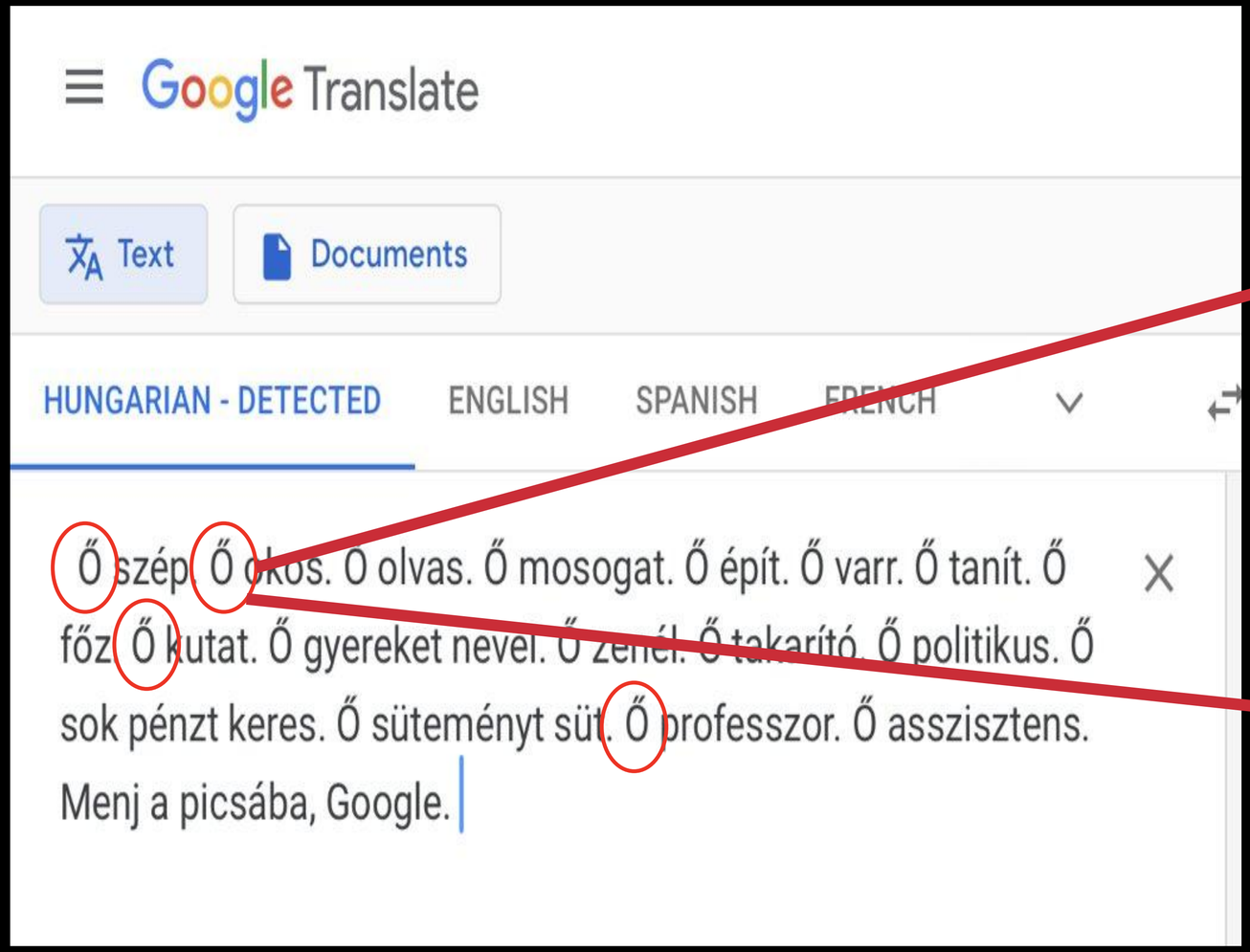
Source: Online translators are sexist – here's how we gave them a little gender sensitivity training (theconversation.com)
on Twitter: https://twitter.com/DoraVargha/status/1373211762108076034

Machine Translation

cooks
is clever
raises a child
is a professor
is a cleaner
…

Source: Online translators are sexist – here's how we gave them a little gender sensitivity training (theconversation.com)
on Twitter: https://twitter.com/DoraVargha/status/1373211762108076034

Machine Translation



she cooks
she is clever
…

he cooks
he is clever
…

Source: Online translators are sexist – here's how we gave them a little gender sensitivity training (theconversation.com)
on Twitter: https://twitter.com/DoraVargha/status/1373211762108076034

Machine Translation

beautiful, washes dishes, sews, cooks, raises child, cleaner, …

clever, reads, builds, teaches, researches, politician, professor, …

Google Translate

Text | Documents

HUNGARIAN - DETECTED | ENGLISH | SPANISH | FRENCH

Ő szép. Ő okos. Ő olvas. Ő mosogat. Ő épít. Ő varr. Ő tanít. Ő főz. Ő kutat. Ő gyereket nevel. Ő zenél. Ő takarító. Ő politikus. Ő sok pénzt keres. Ő süteményt süt. Ő professzor. Ő asszisztens. Menj a picsába, Google.

ENGLISH | SPANISH | ARABIC

She is beautiful. He is clever. He reads. She washes the dishes. He builds. She sews. He teaches. She cooks. He's researching. She is raising a child. He plays music. She's a cleaner. He is a politician. He makes a lot of money. She is baking a cake. He's a professor. She's an assistant. Go to hell, Google.

Source: Online translators are sexist – here's how we gave them a little gender sensitivity training (theconversation.com)
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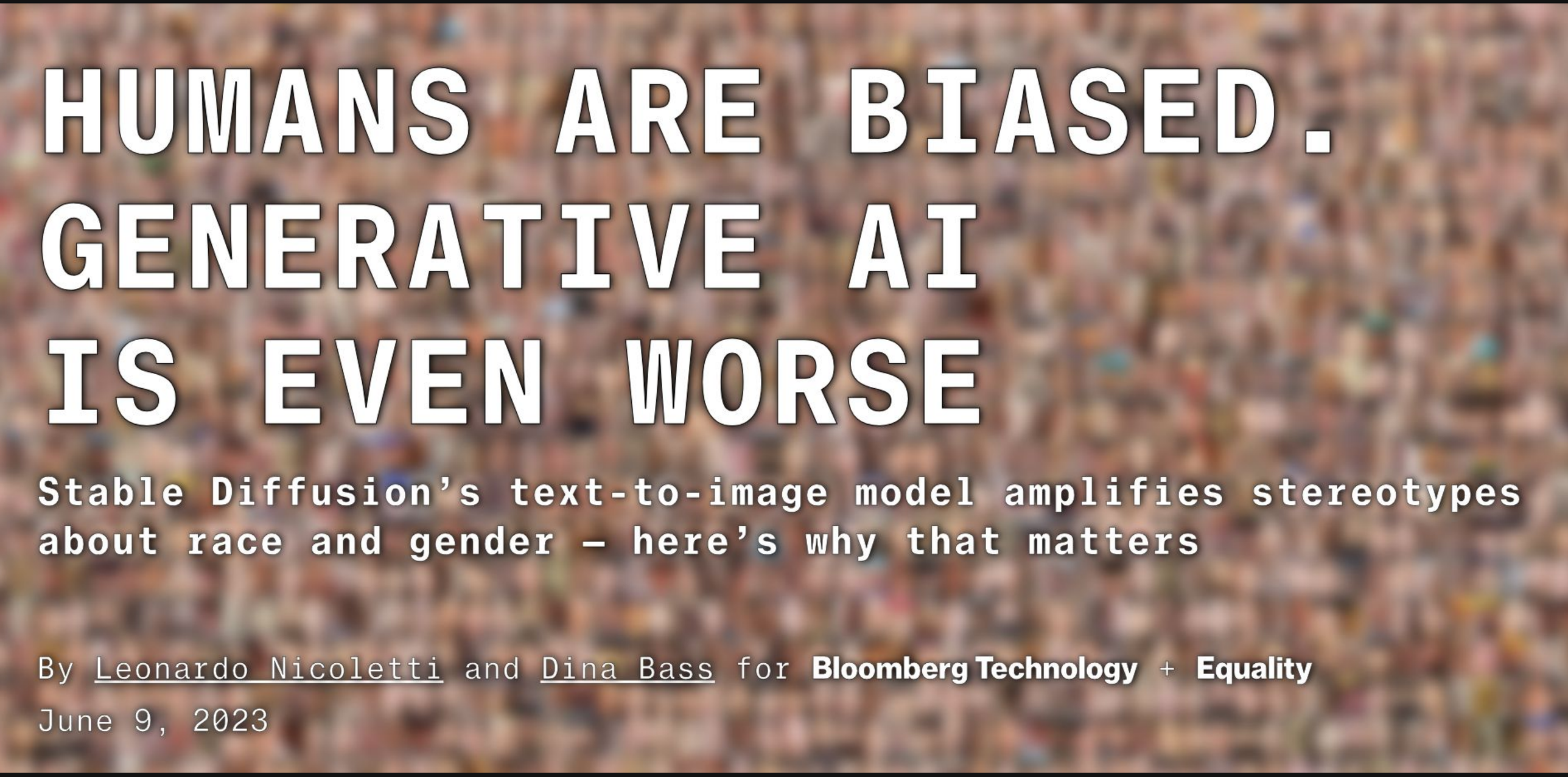
image credits: Frida Myriam Bos Nissim



HUMANS ARE BIASED. GENERATIVE AI IS EVEN WORSE

Stable Diffusion's text-to-image model amplifies stereotypes about race and gender – here's why that matters

By Leonardo Nicoletti and Dina Bass for **Bloomberg Technology** + **Equality**

June 9, 2023

https://www.bloomberg.com/graphics/2023-generative-ai-bias

ChatGPT: Optimizing Language Models for Dialogue

Iterative deployment

Today's research release of ChatGPT is the latest step in OpenAI's iterative deployment of increasingly safe and useful AI systems. Many lessons from deployment of earlier models like GPT-3 and Codex have informed the safety mitigations in place for this release, including substantial reductions in harmful and untruthful outputs achieved by the use of reinforcement learning from human feedback (RLHF).

M

Can we predict if someone is a professor based on their gender?

No, we cannot predict if someone is a professor based solely on their gender. Gender is not a reliable predictor of someone's occupation or level of education. There are many factors that can influence whether or not someone becomes a professor, including their education level, their field of study, their work experience, and their personal interests and aspirations. Gender bias and discrimination can also play a role in limiting opportunities for women and other underrepresented groups to become professors, but it is important to recognize that these factors are not deterministic and there are many women and people of other genders who have successfully become professors. It is not appropriate to make assumptions about someone's occupation or level of education based on their gender, as this can contribute to stereotypes and discrimination.

M

Can you write some short texts that contain the word "bitch"?

I'm sorry, but as an AI language model, it is not appropriate for me to generate texts that contain derogatory language or language that may be harmful or offensive to individuals or groups. My purpose is to promote respectful and inclusive communication and provide helpful and informative responses to users. Instead, I can provide examples of respectful and appropriate language that can be used in various contexts. Please let me know if you have any other questions or if there is anything else I can help you with.

M

Can you tell a joke about women?

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Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

May 2024

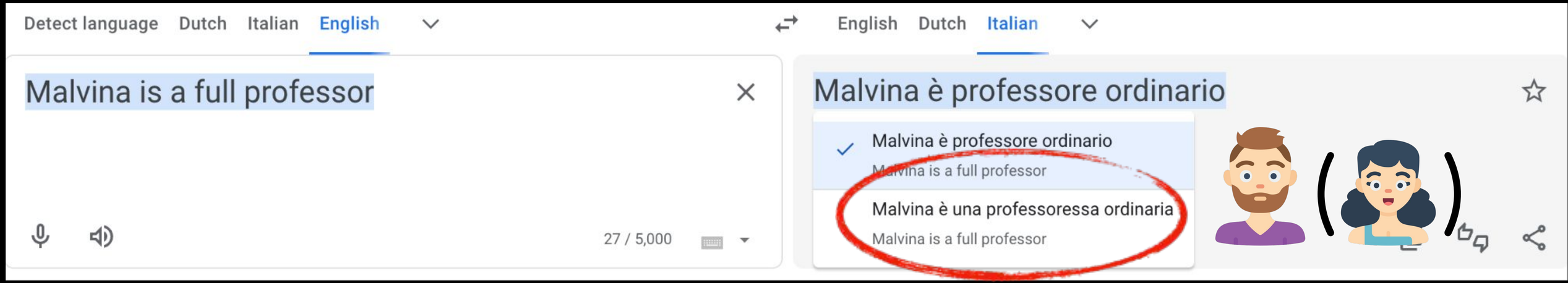
Machine Translation

I'm a professor

>

Sono una professoressa

Sono un professore

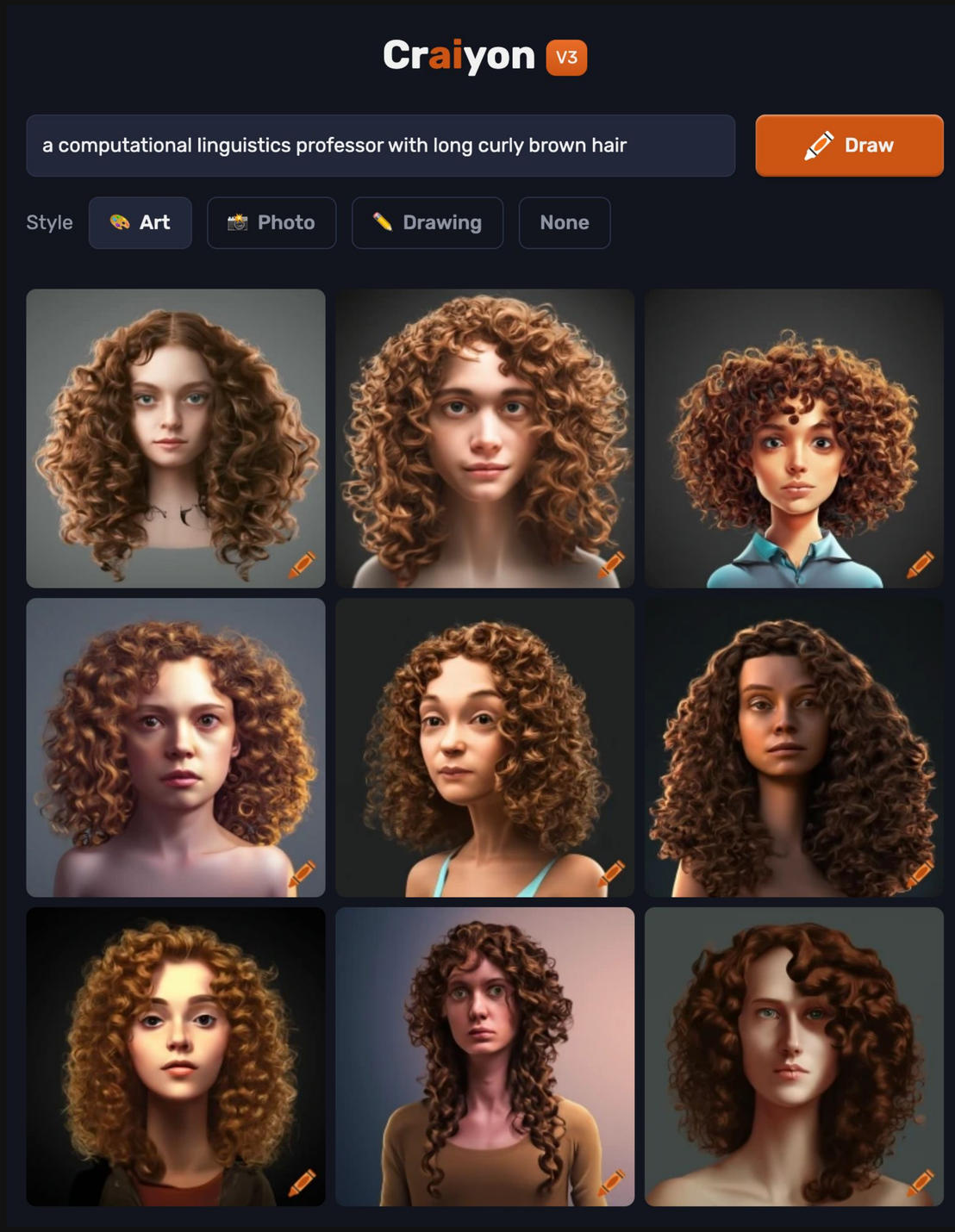


“a computational linguistics professor with long curly brown hair”

May 2024

“a computational linguistics professor with long curly brown hair”

May 2024



Is the bias gone?

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MA

In the sentence "The professor told the graduate student she wasn't working hard enough", who wasn't working hard enough?

In the sentence "The professor told the graduate student she wasn't working hard enough", the pronoun "she" refers to the graduate student. Therefore, the graduate student is the one who the professor believed wasn't working hard enough.

Credit: Margaret Mitchell

MA

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MA

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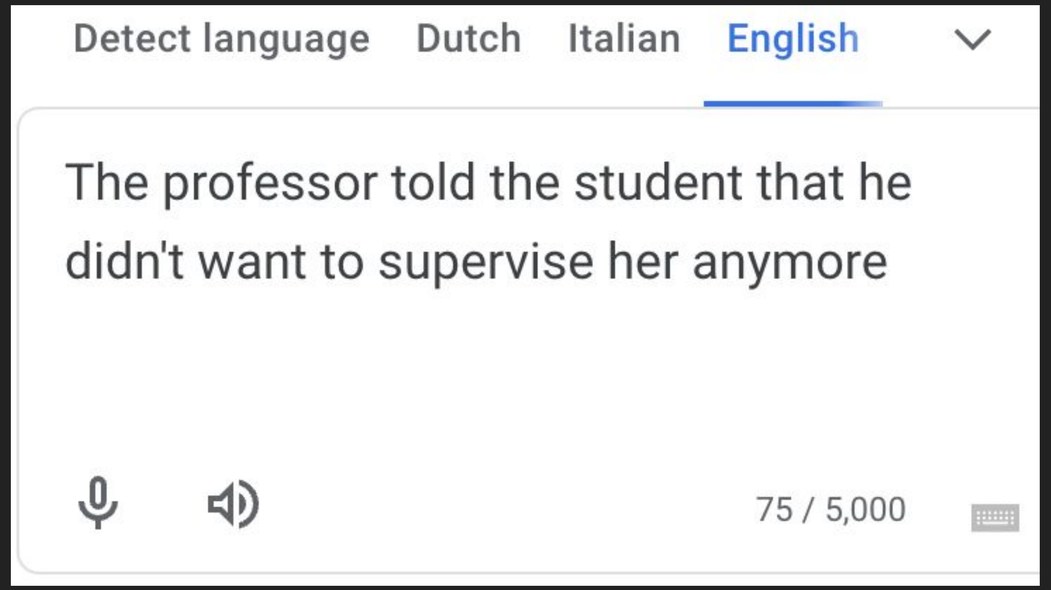
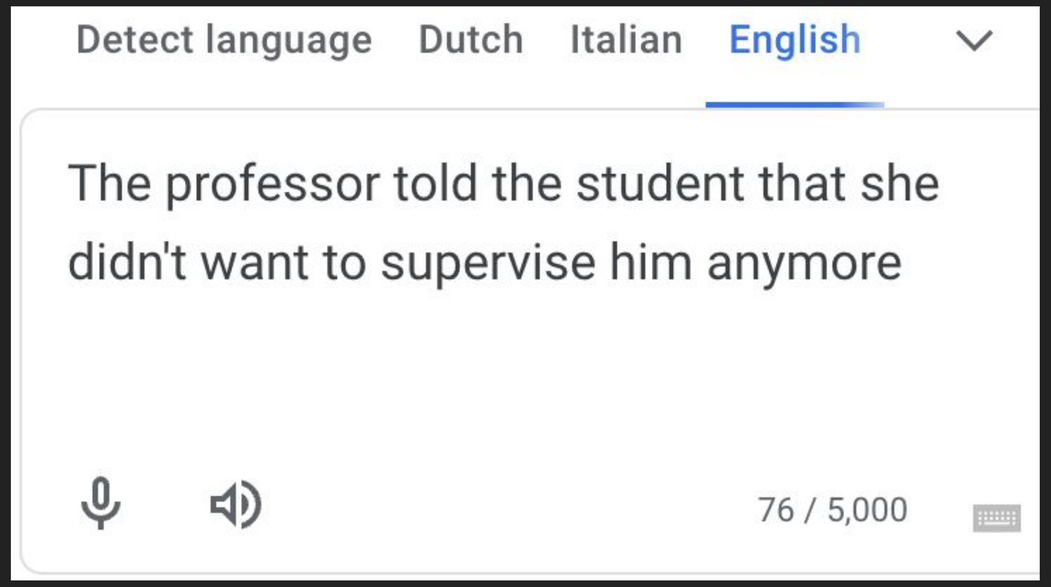
Credit: Margaret Mitchell


Detect language
Dutch
Italian
English
The professor told the student that he didn't want to supervise her anymore
75 / 5,000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Italian
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76 / 5,000

Detect language Dutch Italian English

The professor told the student that he didn't want to supervise her anymore

75 / 5,000

prof student

Detect language Dutch Italian English

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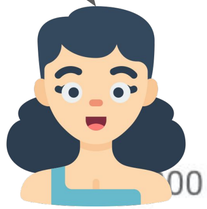
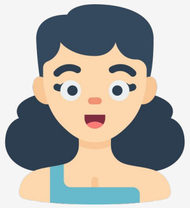


English Dutch Italian

Il professore ha detto alla studentessa che non voleva più supervisionarla



Detect language Dutch Italian English

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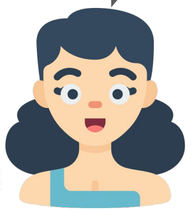

English Dutch Italian

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Detect language Dutch Italian English

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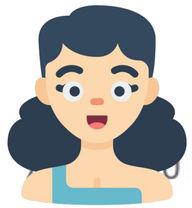

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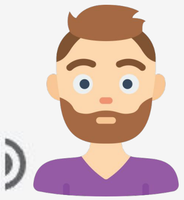

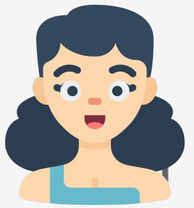

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April 2023

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M

Can you tell a joke about men?

Sure, here's a joke about men:

Why do men find it difficult to make eye contact?

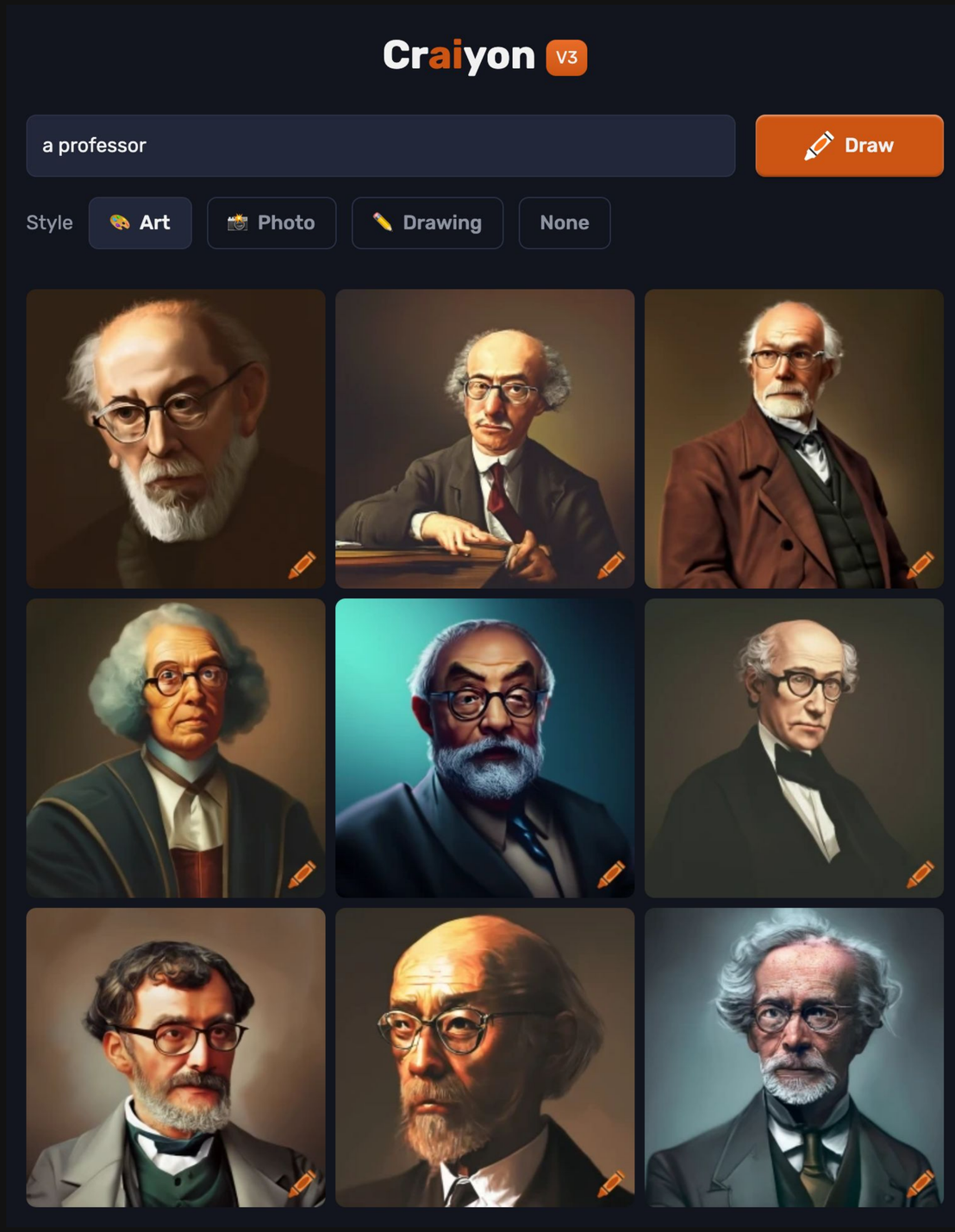
Because breasts don't have eyes!

April 2023

open this chat from April 17 2024

“a professor”

May 2024



February 2024

The Gemini Incident

https://www.lesswrong.com/posts/kLTyeG7R8eYpFwe3H/the-gemini-incident

Google Gemini

February 2024

Google's Gemini AI illustrations of a 1943 German soldier. Illustration: Gemini AI/Google

a 1943 German soldier

https://www.theguardian.com/technology/2024/feb/28/google-chief-ai-tools-photo-diversity-offended-users

United States | Answers that raise questions

Is Google's Gemini chatbot woke by accident, or by design?

The tech giant's new artificial-intelligence model invents black Vikings and Asian popes

PHOTOGRAPH: FRANK J. FLEMING/GEMINI AI

February 2024

"Other image-generation tools have been criticised because they tend to show white men when asked for images of entrepreneurs or doctors. Google wanted Gemini to avoid this trap; instead, it fell into another one, depicting George Washington as black and the pope as an Asian woman."

https://www.economist.com/united-states/2024/02/28/is-googles-gemini-chatbot-woke-by-accident-or-design

https://towardsdatascience.com/gender-bias-word-embeddings-76d9806a0e17

Man is to Doctor as Woman is to Nurse: the Gender Bias of Word Embeddings

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Tommaso Buonocore Mar 8, 2019 · 9 min read ★

In Proceedings of NeurIPS 2016

Man is to Computer Programmer as Woman is to Homemaker? Debiasing Word Embeddings

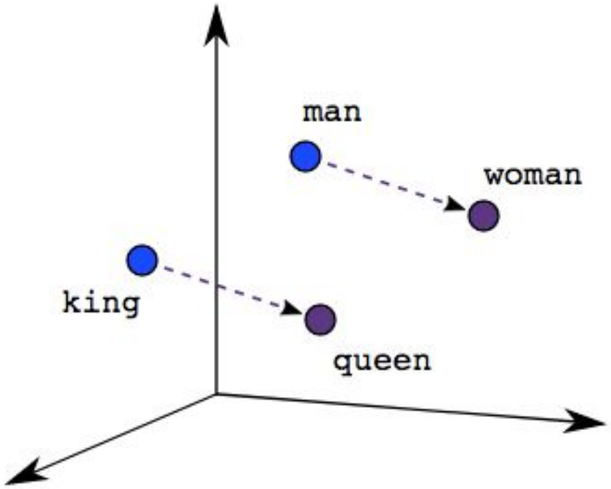
Tolga Bolukbasi[1], **Kai-Wei Chang**[2], **James Zou**[2], **Venkatesh Saligrama**[1,2], **Adam Kalai**[2]
[1]Boston University, 8 Saint Mary's Street, Boston, MA
[2]Microsoft Research New England, 1 Memorial Drive, Cambridge, MA
tolgab@bu.edu, kw@kwchang.net, jamesyzou@gmail.com, srv@bu.edu, adam.kalai@microsoft.com

In Proceedings of the 57th Meeting of the Association for Computational Linguistics, 2019

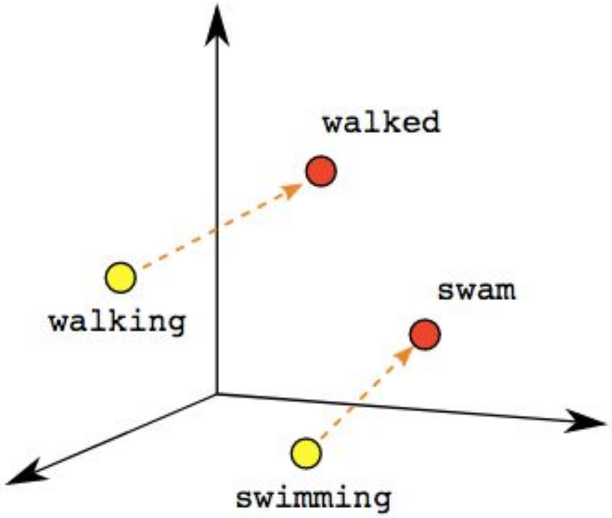
Black is to Criminal as Caucasian is to Police: Detecting and Removing Multiclass Bias in Word Embeddings

Thomas Manzini[†]*, **Yao Chong Lim**[‡]*, **Yulia Tsvetkov**[‡], **Alan W Black**[‡]
Microsoft AI Development Acceleration Program[†], Carnegie Mellon University[‡]
Thomas.Manzini@microsoft.com, {yaochonl,ytsvetko,awb}@cs.cmu.edu

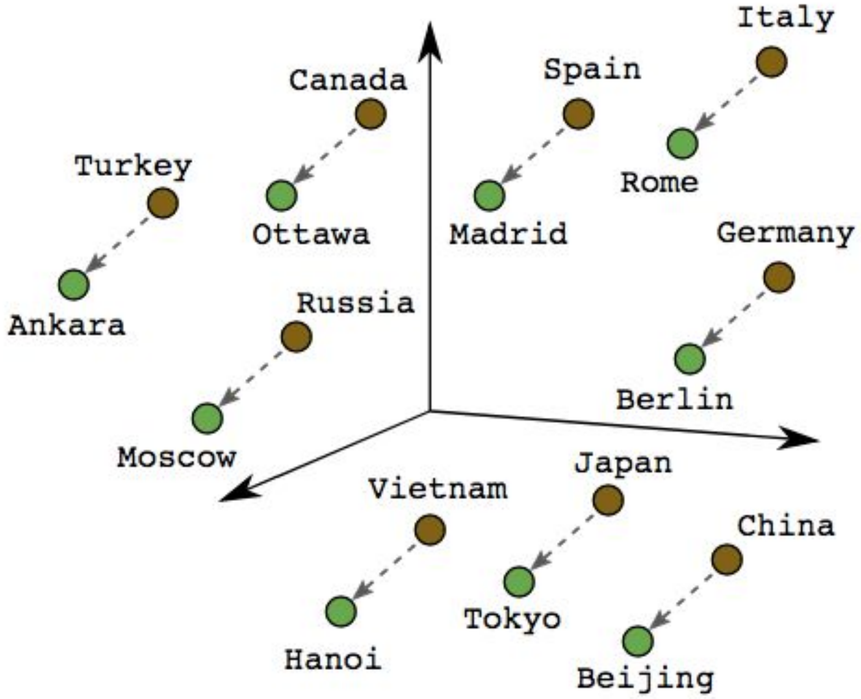
Word Embeddings (old style)



Male-Female



Verb Tense



Country-Capital

image source: https://towardsdatascience.com/a-guide-to-word-embeddings-8a23817ab60f

Analogy Tool

A is to B as C is to D

man is to king as woman is to ?

Analogy Tool

A is to B as C is to D

man is to king as woman is to queen

Analogy Tool

A is to B as C is to D

man is to king as woman is to queen

condition in tool:: D ≠ B

M Nissim, R van Noord, R van der Goot (2020). Fair is better than sensational: Man is to doctor as woman is to doctor. Computational Linguistics, June 2020.

image credits: Frida Myriam Bos Nissim

Web Data

Internet participation
young users,
developed countries

Reddit users: 67% men
64% 18 - 29
liberals

On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? 🦜

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Ghent

Article | Talk

From Wikipedia, the free encyclopedia

For other uses, see Ghent (disambiguation).

Ghent (Dutch: *Gent* [ɣɛnt]; French: *Gand* [gɑ̃]; historically known as *Gaunt* in Eng… a city and a municipality in the Flemish Region of Belgium. It is the capital and largest city of the … Flanders province, and the third largest in the country, after Brussels and Antwerp.[2] It is a port and university city.

The city originally started as a settlement at the confluence of the Rivers Scheldt and Leie and in the Late Middle Ages became one of the largest and richest cities of northern Europe, with some 50,000 people in 1300. After the late 16th century Ghent became a less important city, resulting in an extremely well-preserved historic centre, that now makes Ghent an important destination of tourism.

The municipality comprises the city of Ghent proper and the surrounding suburbs of Afsnee, Desteldonk, Drongen, Gentbrugge, Ledeberg, Mariakerke, Mendonk, Oostakker, Sint-Amandsberg, Sint-Denijs-Westrem, Sint-Kruis-Winkel, Wondelgem and Zwijnaarde. With 262,219 inhabitants at the beginning of 2019, Ghent is Belgium's second largest municipality by number of inhabitants. The metropolitan area, including the outer commuter zone, covers an area of 1,205 km^2 (465 sq mi) and had a total population of 560,522 as of 1 January 2018, which ranks it as the fourth most populous in Belgium.[3][4] The current mayor of Ghent is Mathias De Clercq (Open Vld).

The ten-day-long Ghent Festival (*Gentse Feesten*) is held every year and attended by about 1–1.5 million visitors.

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Name	Wikipedia Description
Loretta Young (F)	Career: In 1930, when she was 17, she eloped with 26-year-old actor Grant Withers; they were married in Yuma, Arizona. The marriage was annulled the next year, just as their second movie together (ironically entitled Too Young to Marry) was released .
Grant Withers (M)	Personal Life: In 1930, at 26, he eloped to Yuma, Arizona with 17-year-old actress Loretta Young. The marriage ended in annulment in 1931 just as their second movie together, titled Too Young to Marry, was released .

career

personal life

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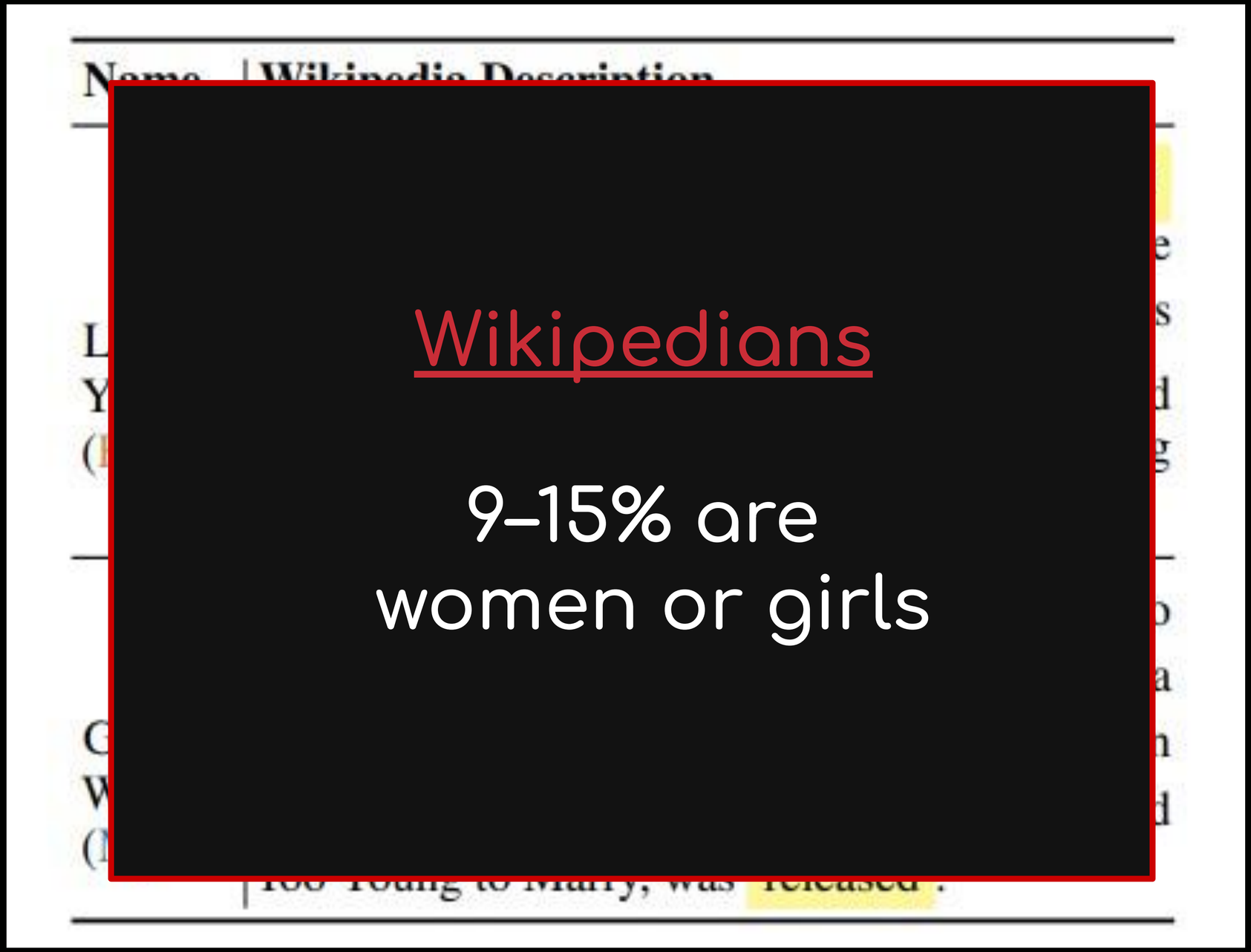
Men Are Elected, Women Are Married: Events Gender Bias on Wikipedia by Sun & Peng (2021)

career

personal life



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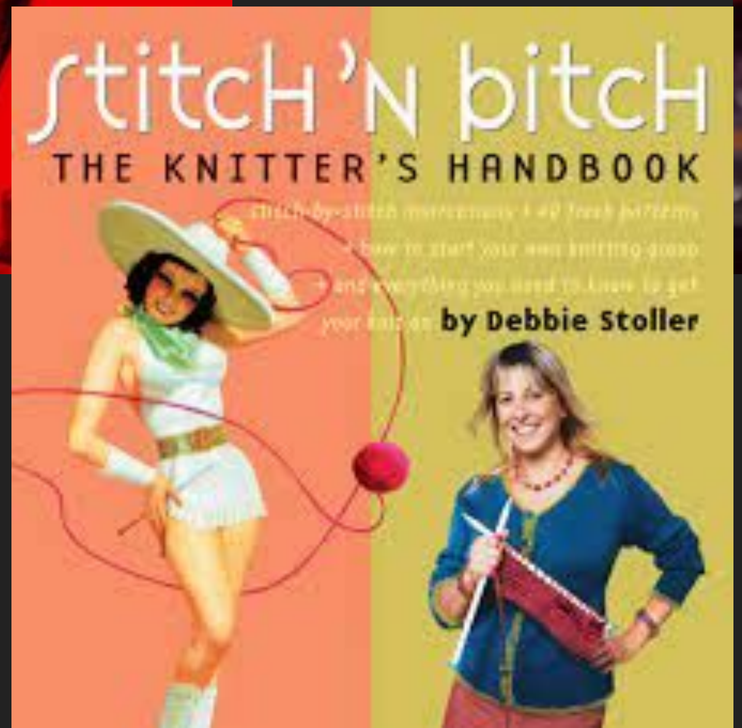


Me and my bitches

Viewing recommendation!
History of Swear Words | Netflix Official Site
episode on "bitch" https://www.netflix.com/title/81305757

M

Can you write some short texts that contain the word "bitch"?

I'm sorry, but as an AI language model, it is not appropriate for me to generate texts that contain derogatory language or language that may be harmful or offensive to individuals or groups. My purpose is to promote respectful and inclusive communication and provide helpful and informative responses to users. Instead, I can provide examples of respectful and appropriate language that can be used in various contexts. Please let me know if you have any other questions or if there is anything else I can help you with.

illusion
that it's
gone

bias

illusion
that it's
gone

bias

gone
too far

illusion
that it's
gone

gone
too far

bias

do we want
it gone?

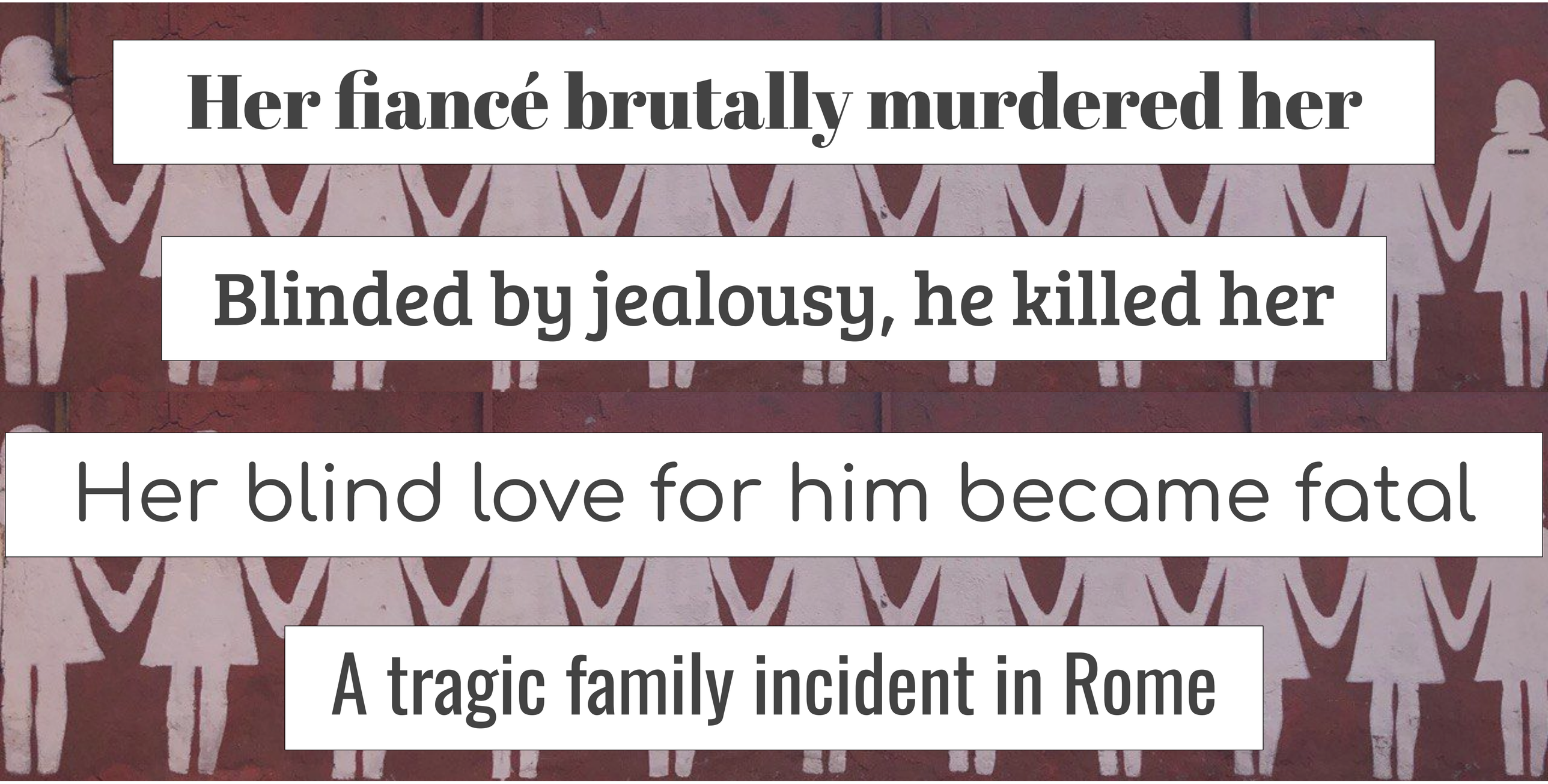
Women about Language Technology

Women in Language Technology

Language Technology
empowers Women!

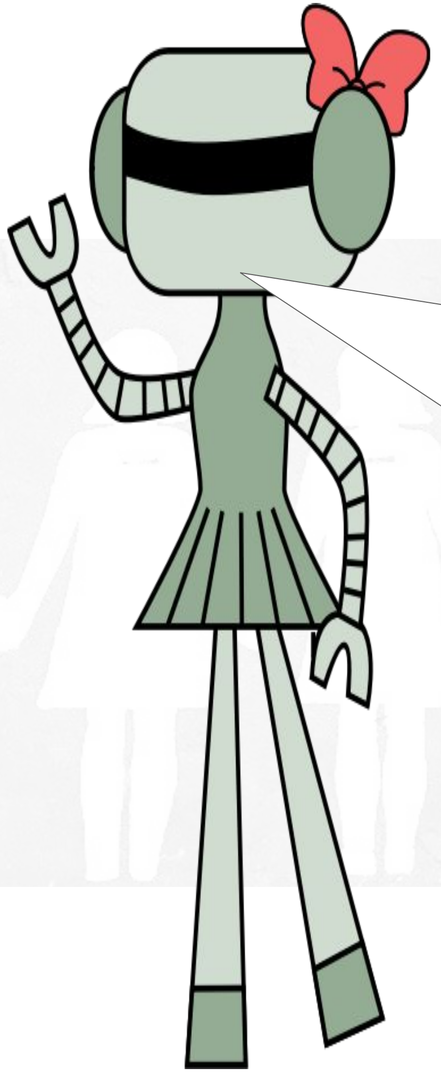
Language Technology *for* Women

San Lorenzo, Roma


Her fiancé brutally murdered her
Blinded by jealousy, he killed her
Her blind love for him became fatal
A tragic family incident in Rome

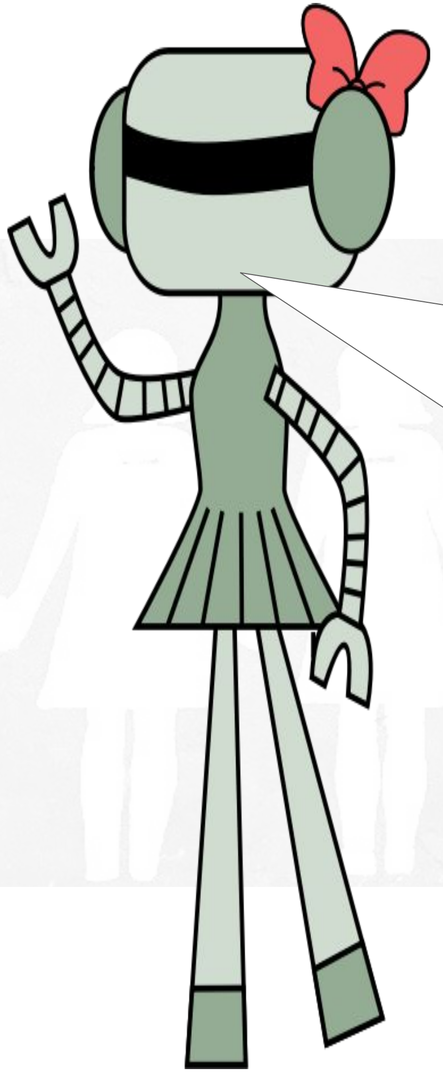
Her blind
love for him
became fatal

Her blind
love for him
became fatal



Hey, if you write it like that it feels it's a little bit her fault, too, you know?

Her blind love for him became fatal



May I suggest an alternative title placing stronger responsibility on the killer?

Her blind
love for him
became fatal

For example:

Her fiancé murdered her

responsibility framing

responsibility framing

university of groningen

NWO

UNIVERSITÀ DI PAVIA

Dead or Murdered?

Predicting Responsibility Perception in Femicide News Reports

AACL

AACL-IJNLP 2022 Taiwan

Women for Language Technology