

Machine Learning

- Step one: gather a huge amount of data
- Apply one of any number of algorithms that learn the underlying patterns of data
- These algorithms will reflect the biases of the data upon which they were trained

One Example Algorithm: “Word2vec”

- *Reads* a LOT (millions of words of) text
- *Learns* which words occur in similar context
- *Places* words in space so that similar words are near each other

Mikolov, T., Sutskever, I., Chen, K., Corrado, G. S., & Dean, J. (2013). Distributed representations of words and phrases and their compositionality. In *Advances in neural information processing systems* (pp. 3111-3119).

Learning “Distances” Between Words



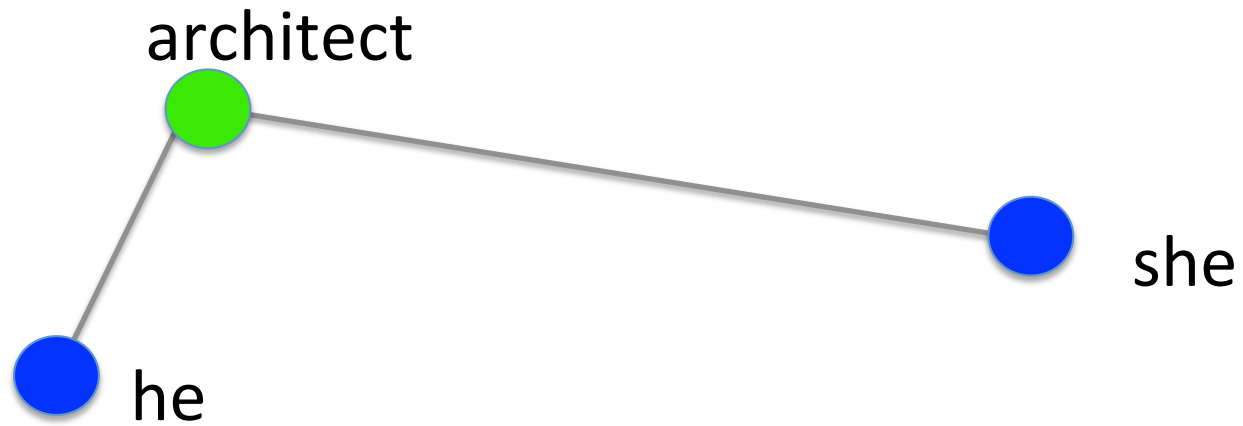
(Semantic distance typically measured as cosine similarity between vectors representing two words.)

Learning “Distances” Between Words



Bolukbasi, T., Chang, K. W., Zou, J. Y., Saligrama, V., & Kalai, A. T. (2016). Man is to computer programmer as woman is to homemaker? debiasing word embeddings. In *Advances in neural information processing systems* (pp. 4349-4357).

Learning “Distances” Between Words



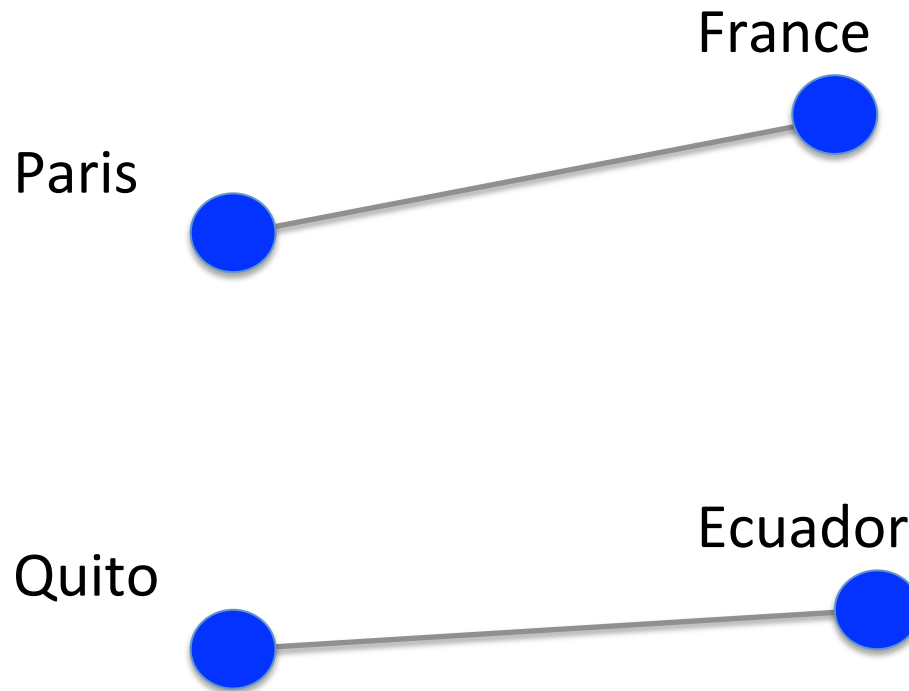
Bolukbasi et al.

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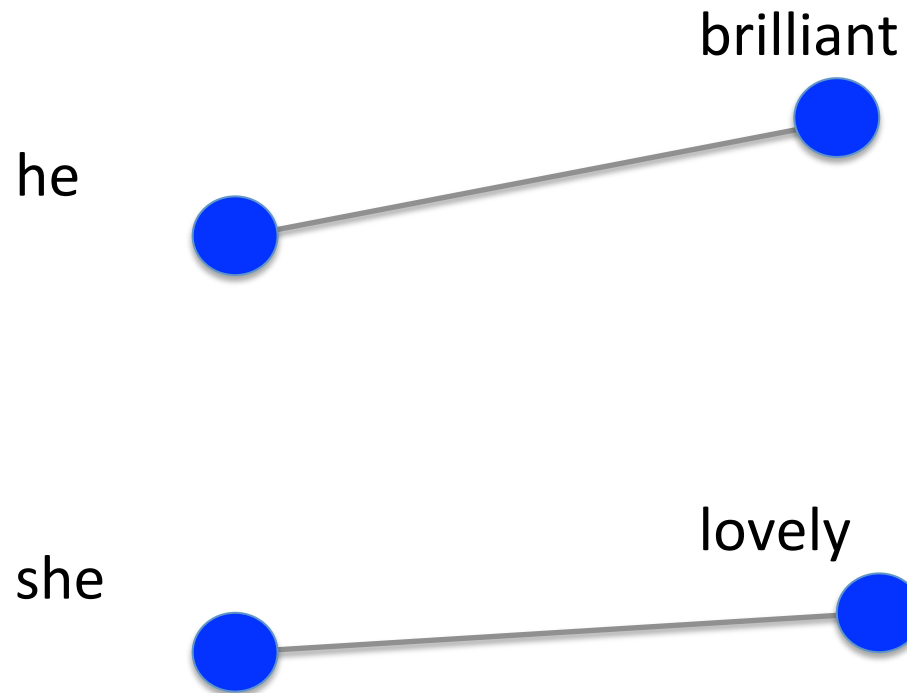


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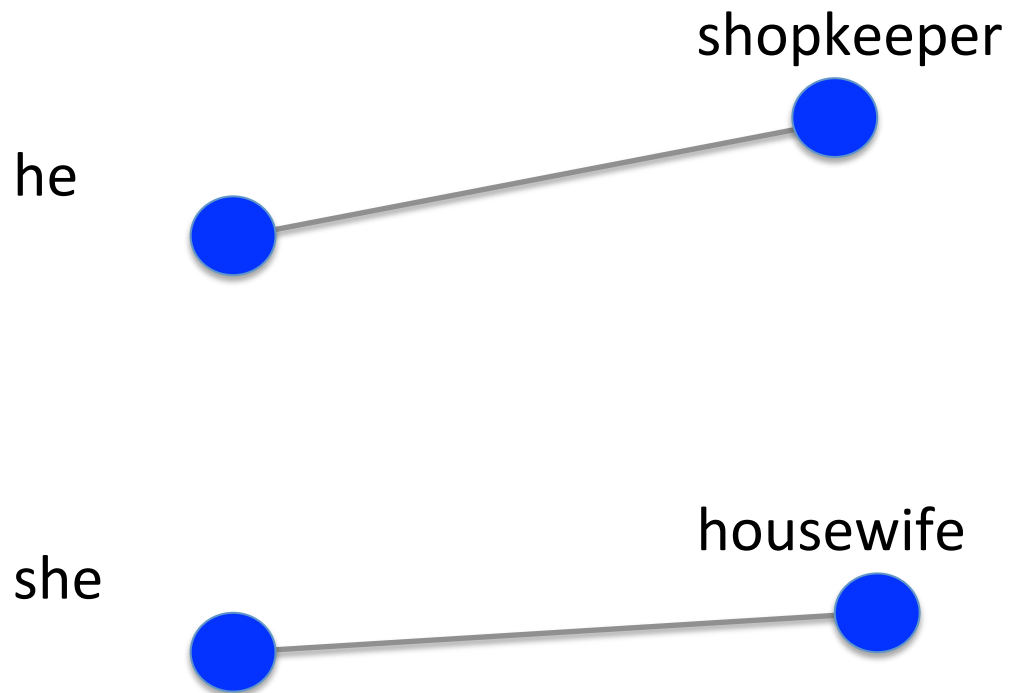
Machine Learning for Analogies



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Algorithmic Bias and Language

- What are the causes?
 - Algorithms are what they eat, and are mostly “fed” text that is either 1) old, or 2) “general”
 - examples: novels from the 1800s, all of Wikipedia

Algorithmic Bias and Language

- What are the cures?
 - Computer scientists are using machine learning to build models that are “fair” (i.e. have no “bias”)

Algorithmic Bias and Language

- What are the cures?
 - Computer scientists are using machine learning to build models that are “fair” (i.e. have no “bias”)
 - What about embracing the political nature of algorithms?

The Case of Tay (2016)

- Microsoft's Twitter Bot that updated the way it "spoke" based on interactions with Twitter users
- Within hours, trolls had indoctrinated Tay into a hard/alt-right ideology

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- Microsoft's Twitter Bot that updated the way it "spoke" based on interactions with Twitter users
- Within hours, trolls had indoctrinated Tay into a hard/alt-right ideology
- This event actually reveals the real stakes of *algorithmic politics*:

we must be the teachers of machines.

Return to the Tamagotchi or “The Speaking Egg”

Design Goals:

- Algorithm as animal/pet
- Extremely laborious
- Focuses on the nature of *care*
- Provides feedback to show the effect’s of one’s care (i.e. show how the algo works)
- Emphasize linguistic glitch (i.e. “poetry”)



In the epoch of the algorithmic implementation of applied mathematics in computerized machines, there is no longer any need to think: thinking is concretized in the form of algorithmic automatons that control data-capture systems and hence make it obsolete. As automatons, these algorithms no longer require it in order to function – as if thinking had been proletarianized by itself.

Automatons should be put at the service of dis-automatization...including first and foremost in the service of their own dis-automatization.

Stiegler, B. (2018). *Automatic society: The future of work* (Daniel Ross, Trans.). John Wiley & Sons, 2018.

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Slides for Workshop at ISCP

with Orr Menirom

and Alex Juhasz

May, 2019