

Applied Artificial Intelligence

Session 26: GANs II, Fairness and Ethics in AI

Fall 2018

NC State University

Lecturer: Dr. Behnam Kia

Course Website: <https://appliedai.wordpress.ncsu.edu/>

Homework

Deadline: Next Tuesday, 3PM

- Use an RNN network to classify MNIST dataset.
- Each image is 28×28 . Consider each column (28 pixels) as one input. The sequence to RNN would be 28 columns of 28 pixels, each column given at one time step.
- Try simpleRNN, LSTM, and GRU.
- Try multiple stacks of those units.
- Use dropout to fight against overfitting (if needed).
- Accuracy of $\sim 98\%$ can be easily obtained.

AI : Ethics and Fairness

- AI solutions can be racist, misogynist, homophobic,...

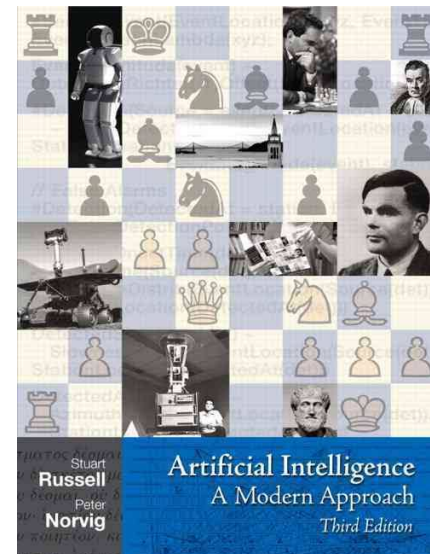
AI : Ethics and Fairness

- AI solutions can be racist, misogynist, homophobic,...
- And we are not paying enough attention to it!
- Among 6 state-of-the-art books listed as this course's textbooks, **NONE** of them discusses fairness and ethical challenges that come with (data-driven) AI.

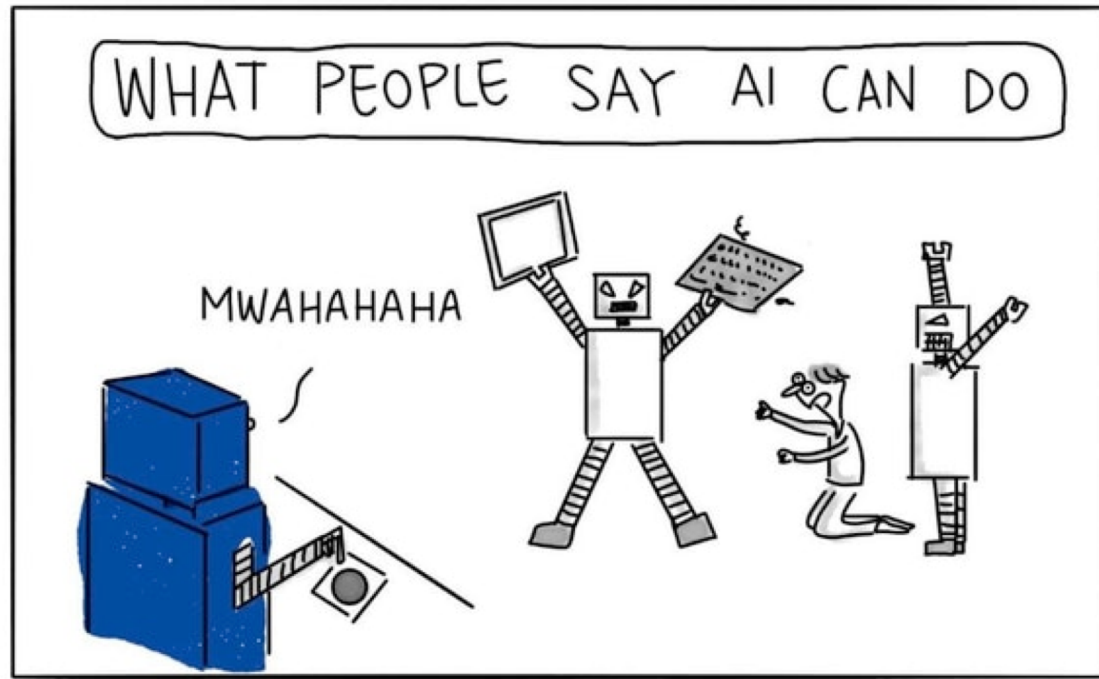
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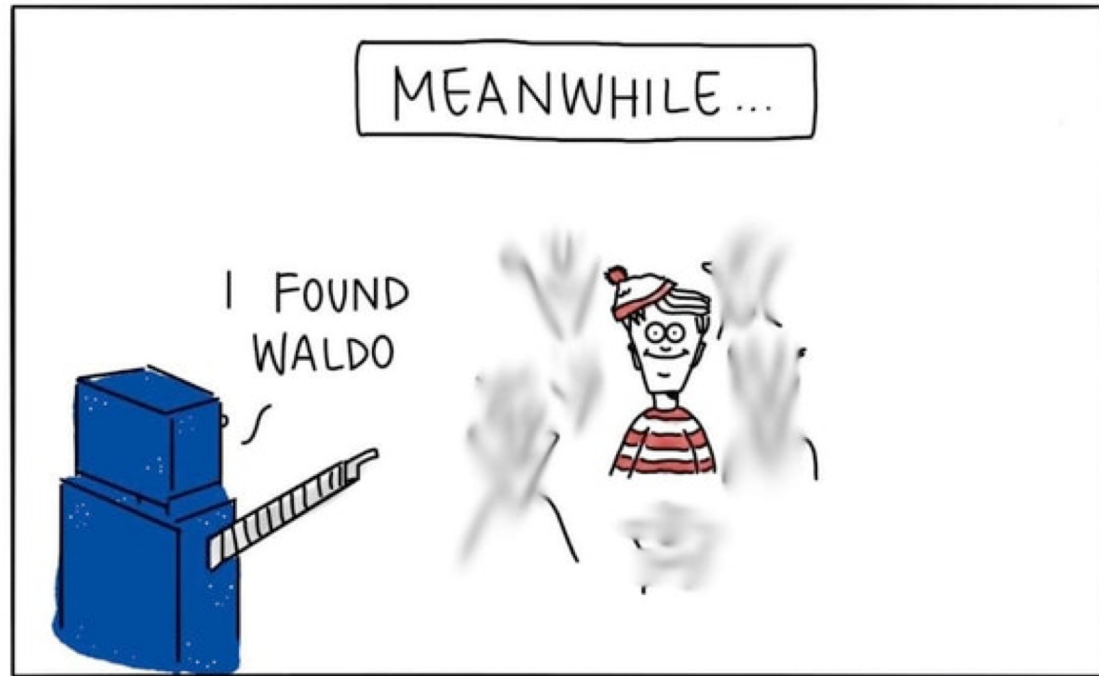
Some discussions can be found on classic AI books such as Russel's book: Section 26.3: The Ethics and Risks of Developing Artificial Intelligence



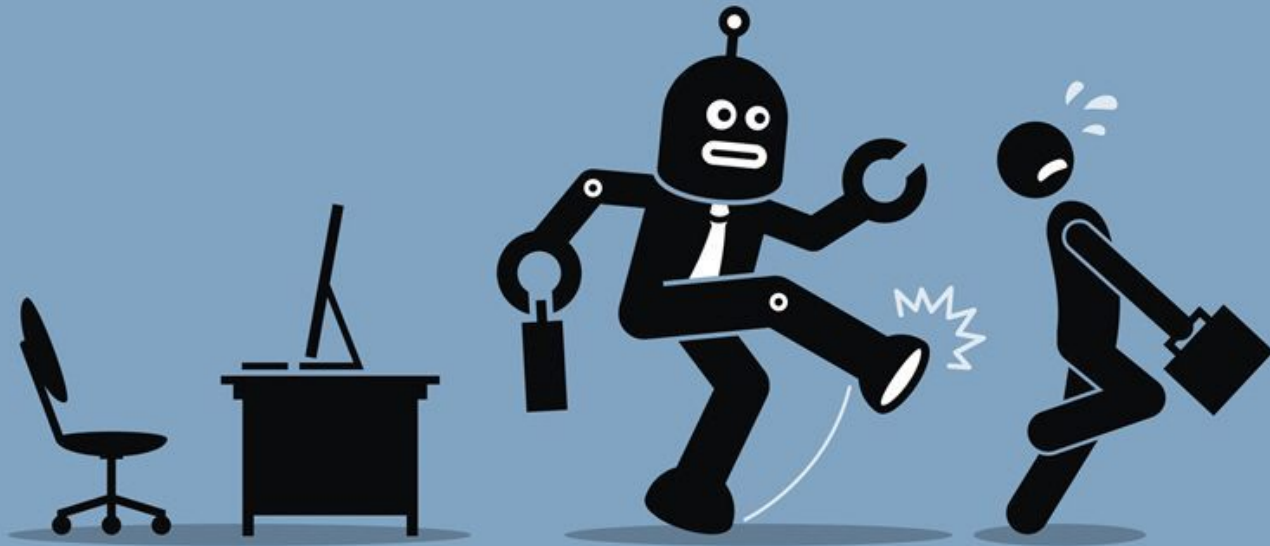
General AI
(We don't have this)



Narrow AI
(This is what we have)

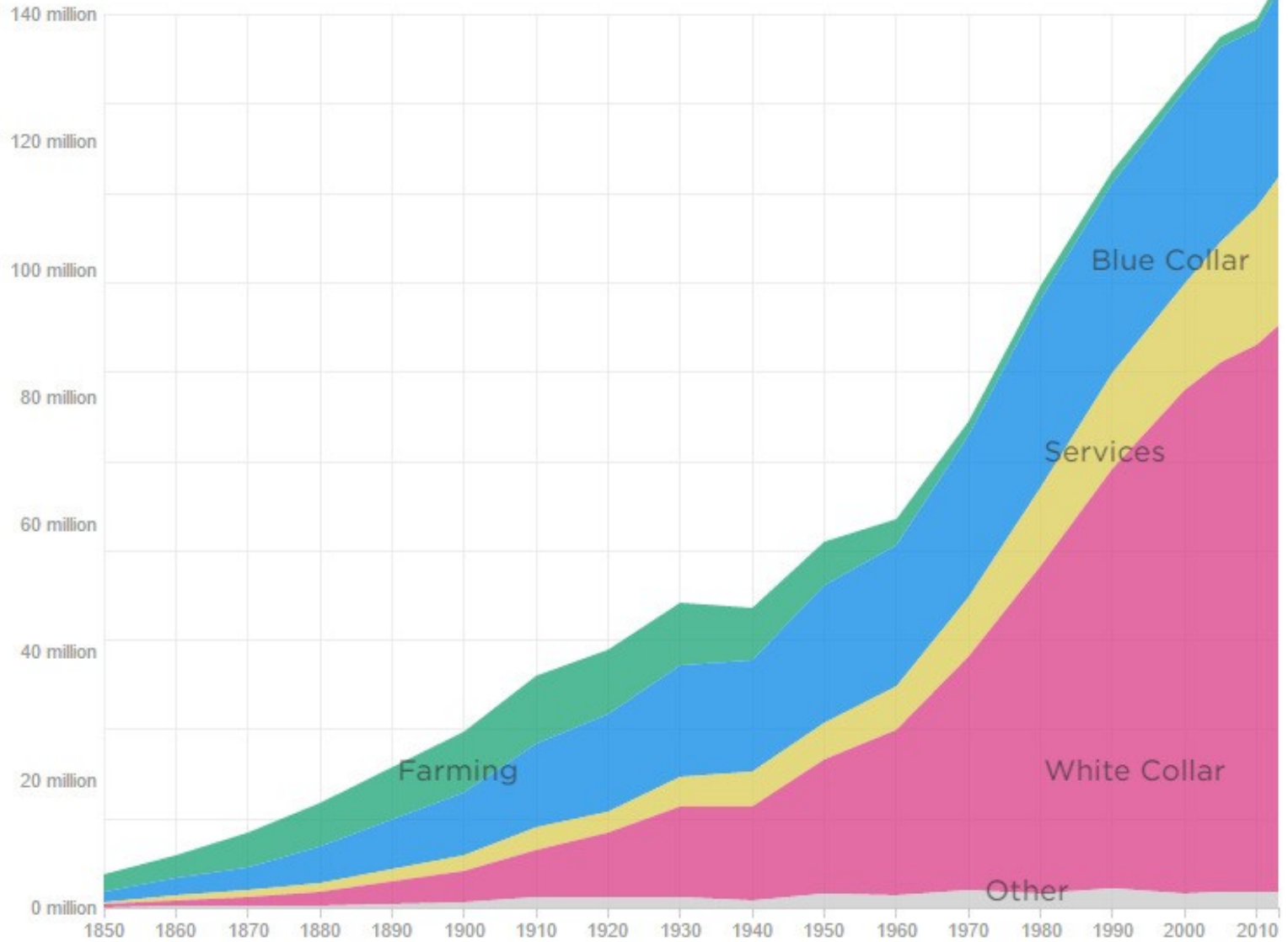


Losing Jobs?





The Luddite movement, 1811 to 1816.





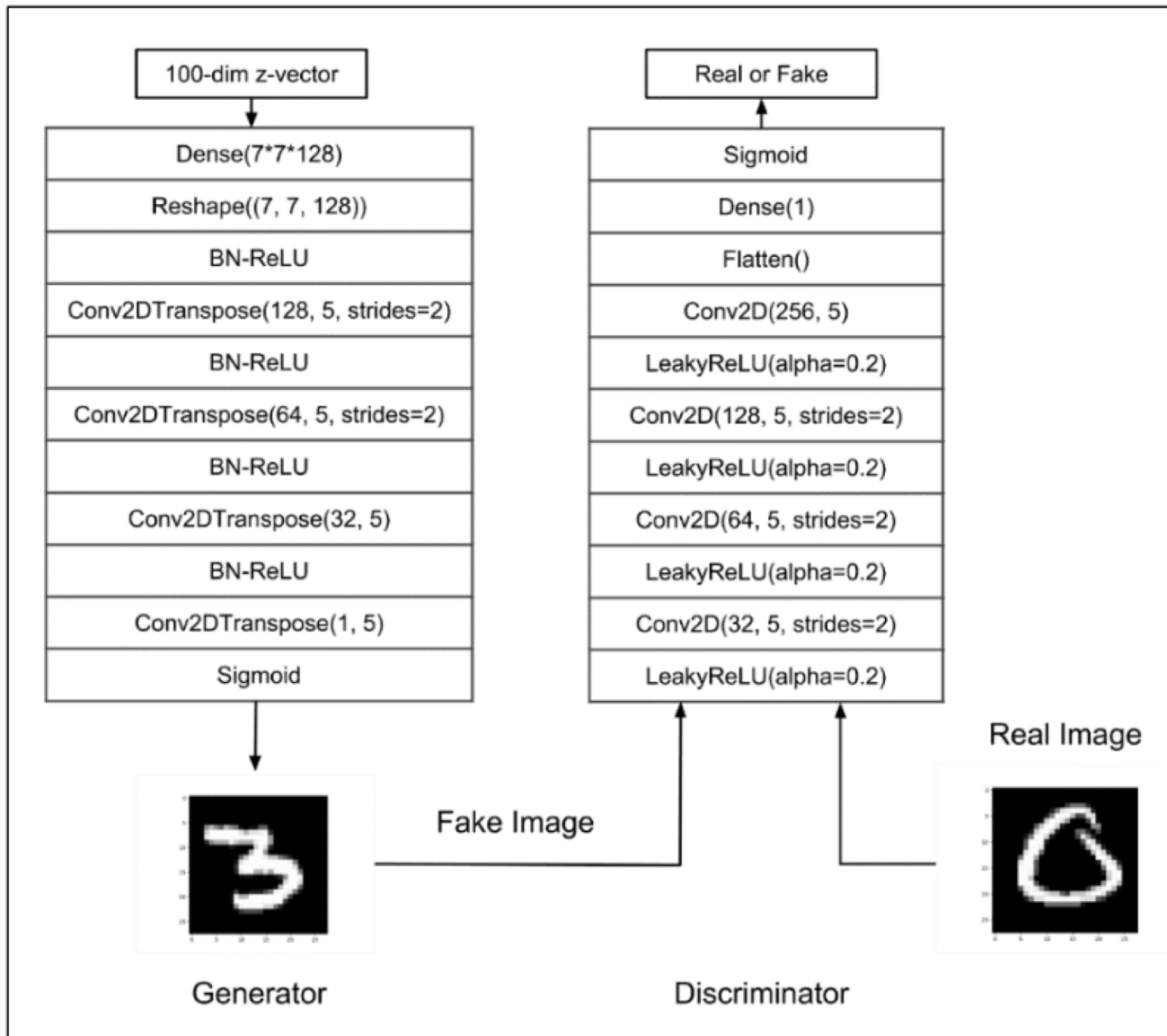
A new global majority: Half the world is now middle class or richer, study finds

- **For the first time, the majority of the world's population is not poor or vulnerable to poverty and the middle class accounts for the globe's largest economic group**
- **As of September, an estimated 3.8 billion people are now middle class or rich**
- **Asia is driving middle class growth, as companies have increased productivity and improved manufacturing technology to become more profitable over time**
- **A majority - nearly 3.6 billion - of those are strictly middle class, defined as households that spend \$11-110 per person per day, and the number is growing**
- **The middle class are on track to reach 5.3 billion people worldwide by 2030**

AI and Job Market

- Disruptive technologies and job market are not a zero-sum game.
- In **Macro Level**, machines and automation take some jobs from humans, but usually more and better and higher paying jobs are created because of the new technologies and increased productivity.
- But in **Micro Level** those who are replaced by machines can and usually would hurt. Those affected need support and retraining for new jobs.

Deep Convolutional GANs



Conditional GAN

