Snake oil and Artificial Intelligence
How to recognize AI snake oil

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(11/25/2019)

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I. Introduction

- The purpose of this work is to present some current Data Science News for DDS Section 402 - Fall 2019 in the program MSDS of SMU.
- Last week, the Princeton computer scientist Arvind Narayanan has posted slides and notes from a recent MIT talk on "How to recognize AI snake oil". This subject has been raised by David Josephs.
  Link: https://www.cs.princeton.edu/ arvindn/talks/MIT-STS-AI-snakeoil.pdf

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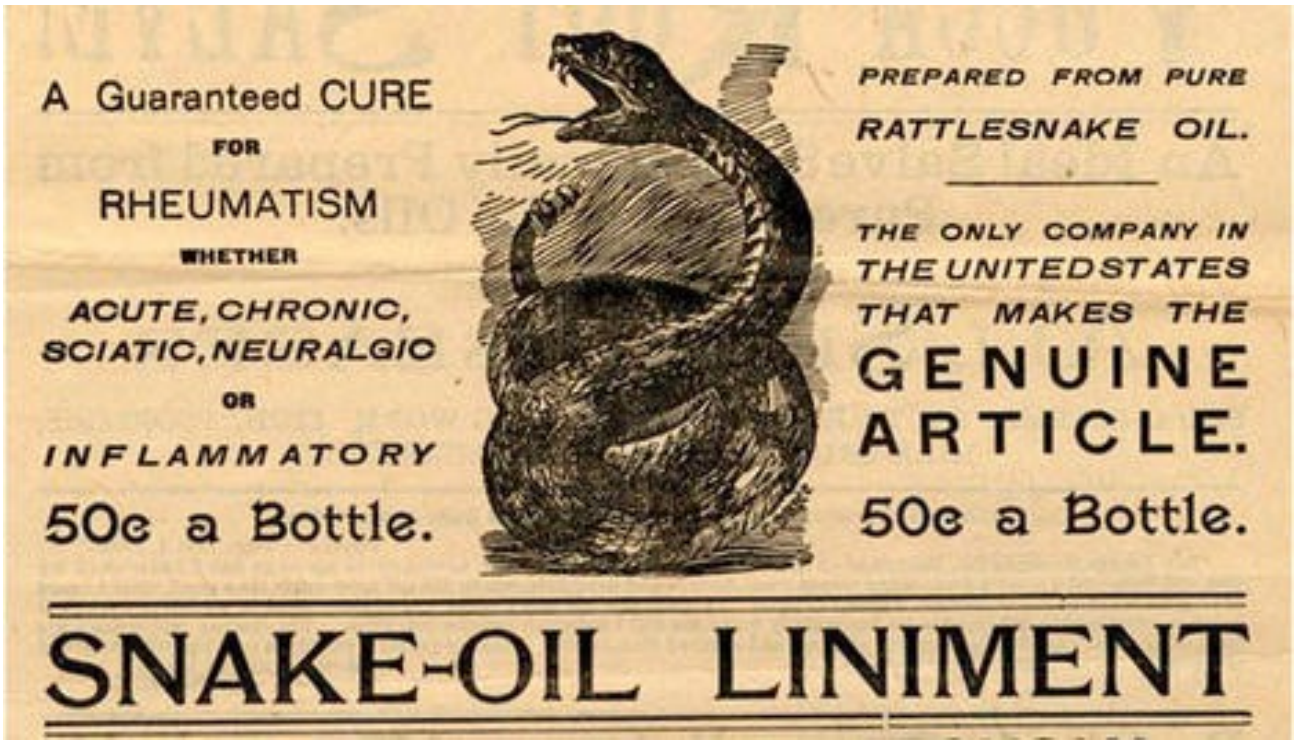
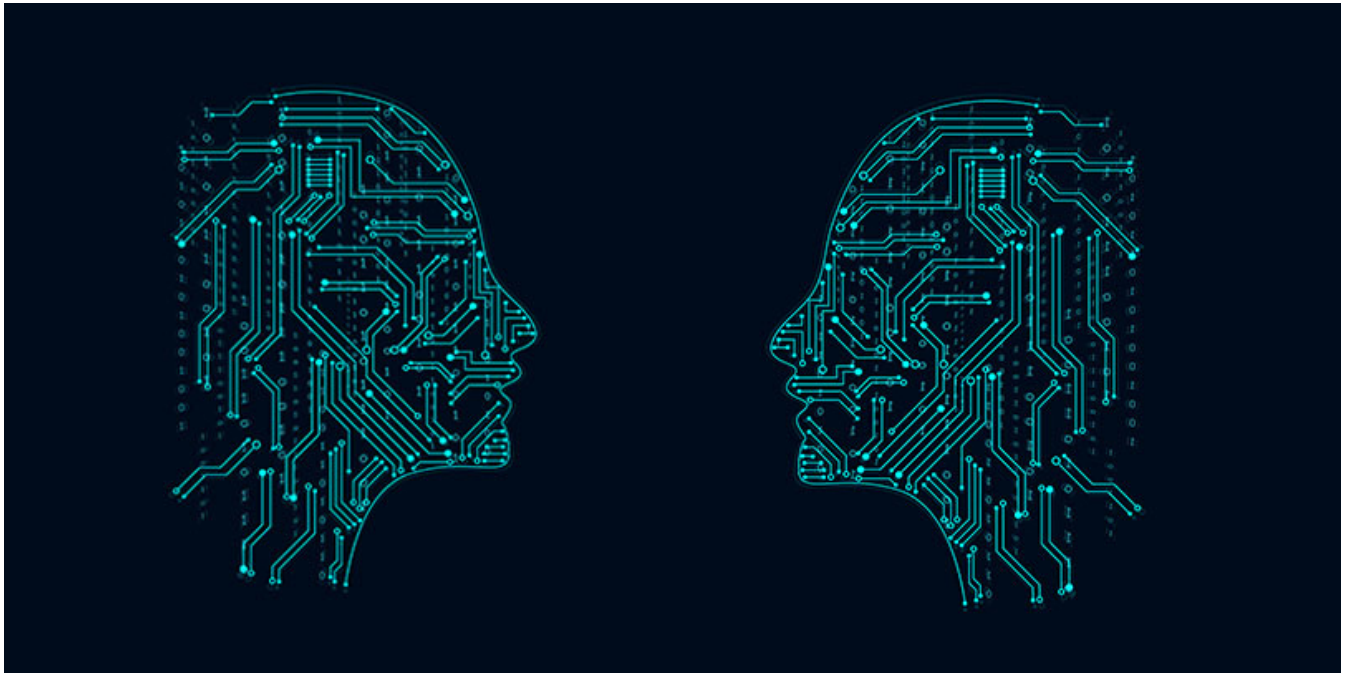
- **Snake oil:** In the 19^{th} century, salesmen would travel around selling "snake oil" as a panacea. But most of these elixirs and ointments held no medicinal benefits and did not contain oil extracted from snakes. So rampant was this con, that snake oil became a universal term for fake products and false promises.

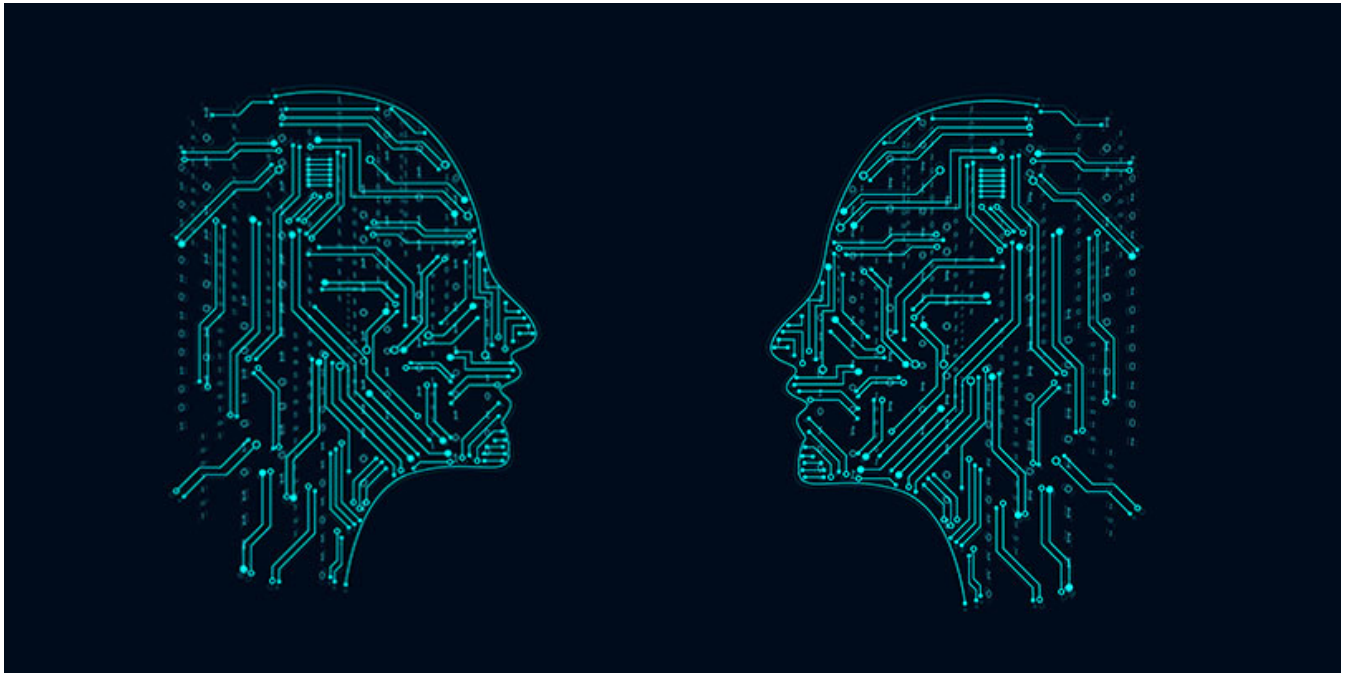




- Fast forward to the 21st century. Snake oil products have evolved over the ages, sneaking their way into modern technology. The tech industry today is full of software snake oil. It takes many forms, from vapourware and futureware to over-egged promises of functionality.

But the crown jewel of tech snake oil?

Apparently, it's AI.



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Artificial Intelligence

In computer science, Artificial Intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans.

Leading AI textbooks define the field as the study of "Intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals.Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving".

- https://en.wikipedia.org/wiki/Artificial_intelligence

II. The different flavors of AI snake oil

- **Misclassification of a company:** As discussed in the study, sometimes people assume that a company uses AI within their offering and processes, even when it doesn?t. As a result, the products or services these companies sell can come with a side serving of AI snake oil.

II. The different flavors of AI snake oil

- **Pseudo-AI:** There have been some recent incidents involving the exposure of major AI snake oil. Namely, the revelation of humans acting as AI. This is often unbeknown to the investors and customers of the business. Nicknamed the 'Wizard of Oz technique', this is a more active deception. Companies are purposefully deceiving customers.

II. The different flavors of AI snake oil

- **Relatives of AI:** The final type of AI snake oil is when a company presents a non-AI product or function as artificial intelligence. When non-AI applications are sold as AI, or AI is a selling point for them, they become another flavour of AI snake oil.

III. How to recognize AI snake oil

- **Perception:** Facial recognition and song identification, where there is a definitive correct answer, which is making "genuine, rapid progress."
- **Automating judgment:** Spam detection, copyright violation, essay grading, where humans routinely make judgments that can be used to train a model, which is "far from perfect, but improving," albeit with limits, because "reasonable people can disagree about the correct decision."
- **Predicting social outcomes:** Predictive policing, predicting terrorist risk, predicting which kids are at risk, which is "fundamentally dubious" because regression analysis and other statistical tools do not work better than "manual scoring using just a few features" – and this doesn't work very well (and that's before you get into areas like training data bias, etc).

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Incomplete & crude but useful breakdown

Genuine, rapid progress

- Shazam, reverse img search
- Face recognition
- Med. diagnosis from scans
- Speech to text
- Deepfakes

Imperfect but improving

- Spam detection
- Copyright violation
- Automated essay grading
- Hate speech detection
- Content recommendation

Fundamentally dubious

- Predicting recidivism
- Predicting job success
- Predictive policing
- Predicting terrorist risk
- Predicting at-risk kids

Perception

Automating judgment

Predicting social outcomes

IV. Takeaways

Takeaways

AI excels at some tasks, but can't predict social outcomes.

We must resist the enormous commercial interests that aim to obfuscate this fact.

In most cases, manual scoring rules are just as accurate, far more transparent, and worth considering.

Main References

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Thank you for your attention