Protocol (Sep 27, 2021)

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This is the 7th week of the course.

Sources

Whiteboard
Lecture on GitHub
Video by Andrew Ng

Housekeeping

This week's general topic seems to be about the implementation of artificial intelligence in real world systems. We began this class with a discussion over what we did in the previous session. We discussed what we had seen in Andrew Ng's video about the usage of AI in radiology and healthcare in general, particularly stressing what he had mentioned about the **AI research-to-production gap**. This is essentially the idea that despite the large amount of research currently being done in the field of AI, there is not a proportionate amount of actual commercial production and use of AI. We focused also on his discussion of the pathologies; basically, rarer pathologies are harder to diagnose with AI because there is less available data. However, we also touched on the fact that AI does not always necessarily perform better with more data.

Lecture

We discussed a couple of small-data algorithms, GPT-3 and GAN, particularly the former's relevance with chat-bots, which was connected back to the idea of AI improving with more data, which chat-bots generally do.

We then transitioned into a discussion of the merits of **resilience vs. effectiveness**. While it is good for your AI to be effective at completing its assigned task, it is also important that it's not so specialized that it could not be adapted to circumstances changing over time. For example, say your company spends millions of dollars developing highly specialized AI to work with the company's particular dataset, but if eventually your company decides to dramatically change the structure of their databases and tables, you would want your very expensive program to be adaptable and resilient to the change, rather than having to completely start over.

This discussion of resilience and changing circumstances led into our topic of **change management**. First, we watched more of Andrew Ng's video about AI in healthcare. Rather than radiology, this time he discussed the applications of AI in palliative care, specifically determining which patients are recommended or not. Ng talked about how it is often not simple

to implement, as doctors are prone to resisting what might be considered as “giving up” on their patient and admitting them to palliative care. After the video and our discussion thereof, we discussed a variety of change management models, discussing the pros and cons of each. One was a pyramid model, particularly disliked by our professor, and another was a sort of table of change management “equations,” demonstrating the importance of each of the elements of change management. For example, when an “action plan” is not present during change, the result is usually chaos.

Reflection

I enjoyed this particular session as it was very interesting to see practical applications of AI in healthcare. Furthermore, it was also quite interesting to see how doctors and healthcare personnel react and adapt to this growing technology. The discussion of dataset size in relation to the radiology diagnoses was intriguing as well, as it made me wonder whether things such as HIPAA privacy rules could act as barriers to the collection of valuable healthcare data. I appreciated the discussion of resilience vs. effectiveness as well, as I found that to be extremely relevant during my internship. Our developers had created many systems that did exactly what they needed to perfectly -- but only under the specific conditions that were present at the time of the systems’ implementation. When the company was bought out and it became time to revisit the systems and adapt them to the changes being made, we found that most of the programs were constructed in such a way that they could not easily be adapted to the proposed changes, and everything had to be completely rewritten with that in mind.