

Assignment 1

Part B. Your Turing Test

I am an applied mathematical and computational sciences major with a concentration in biological and life sciences. My field has a wide variety of applications in computational biology, biotech, genomics, and more. It's hard to describe a typical job because my major is meant to have a plethora of different applications. I'll just use as an example of a job that's close to the work I'm currently doing—working as a data scientist for a healthcare research company. In this job you would use machine learning and different statistical methods to predict medical outcomes or proper medical dosing. This can be seen in a recent study which was able to predict hospitalizations from electronic health record data (<https://www.ajmc.com/journals/issue/2020/2020-vol26-n1/predicting-hospitalizations-from-electronic-health-record-data>)

The main computational work for this job would be done using machine learning methods to improve the models you're building. This includes choosing the type of model and improving its ability to predict outputs using things like grid search. Additionally, it is important to use statistical methods to increase the quality of your data (https://en.wikipedia.org/wiki/Data_science).

The hardest part of this process is obtaining quality medical data from patients. Some data is available online, but if you need to get novel data this can involve the lengthy process of finding patients and conducting in person interviews. This is all currently done by people, but in the future, we might be able to construct robots that can conduct these interviews. Additionally, it's hard to know what kind of data is best to predict a certain outcome. Human analysis is needed for this currently, but in the future AI may be able to look at a certain outcome and determine what data would be best suited to predict it.

I would assume that the best judge would be people in the field. Namely, senior data scientists who have a lot of experience in the field and people who have a lot of experience with medical data collection. They would ask questions like what data would be best to predict a certain medical outcome, what patients would produce that data, and what kinds of models would be best suited to do the computational work. A deep understanding of machine learning, data collection methods, how to rework models when they don't perform well, understanding human speech, and more would be key affordances.

It's hard to determine the most important feature, but I would say knowing what data is needed to predict a certain medical outcome. This has been the hardest part of my job so far and no computer can do that in my experience.

Technological advancement always occurs at a scary rate and its hard to predict where it will be in the future. With that in mind, I would think that the ability for AI to predict relevant data will happen, and robots that can interface with patients would be huge steps in the field.

Since this assignment is rudimentary there are a lot of challenges. One significant challenge I've faced is trying to predict what more niche questions might be asked. It's easy to prepare for bigger questions like "what are you interested in?" but much harder to prepare for questions like "if you need to predict the proper dosing of Parkinson's medication, what data should you use?"

My name is Mathish. I was programmed by Sanjeev Janarthanan a senior in the ACMS programs at UW. If I'm not performing up to your standards, you can contact him at sanjrj@uw.edu.

Type to chat with me.

When you want to quit, type 'bye'.

-> I want to work in biotech

Tell me more! That's an area of interest for me!

-> I like math

I can apply the subject but am actually quite bad at pure math

-> I am interested in healthcare

Cool! ACMS majors have many interests, including healthcare

-> My favorite part of data science is modeling

I can't really understand 'My favorite part of data science is modeling' (sorry)

-> my favorite part of data science is modeling

modeling isn't great honestly

-> I like logistic regression modeling

I like recurrent neural nets, but logistic regression is cool

-> I hate data collection

Don't even get me started on collecting data

-> I think acquiring data is hard

It's hard to say!

-> I predict Parkinson's diagnosis outcomes

That's neat! There are a lot of interesting medical outcomes