DIT406: Assignment 6

Calvin Smith, Emir Zivcic

Chalmers University of Technology/University of Gothenburg

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Question 2: Wearable health-technologies and private health insurance

How can the training pipeline affect the predictions of Vivaksa's health status prediction algorithm when deployed on the general public?

The training data consists of health measures from three young and presumably healthy males in their late twenties. When using the prediction algorithm (based on the training data) on the general public, the algorithm only "knows" the training data, and thus peoples predictions will be based on as if they where healthy males in their twenties. For example, females naturally have a higher heart-rate than men, but using Vivaksas prediction algorithm might predict that a random female is unhealthy or stressed beacuse of an elevated heartrate, when in reality her heart rate is perfectly normal for her age and gender.

Furhtermore, the fact that Vivaksa are only using data collected from Apple Smart Watches might yield skewed predictions on the general public since we can assume that people will use a wide variety of wearables to measure health markers. Different wearables might use different technologies to measure the same variables, and they might have different accuracies and errors.

Can Vivaksa improve their predictions? if so how? and if not, why

Vivaksa can improve their predictions by diversifying their training data to more accurately represent the general public. A way of doing this is to start with a larger and more diverse training set and then continously improve their predictions as more and more people start to use Vivaksa's software by including them in the training data.

Can the roll-out of this pilot program undermine the insurance company's own value of fairness? – explain why or why not.

Yes. The system is only fair if the underlying predictions that are used for premium calculations are accurate. As we established in the previous question, Vivaksa's training data is very limited and will yield bad predictions, in turn this will also lead to bad and unfair pricing.

Another aspect of fairness is the fact that people who opt-out of the program automatically get an increased premium. This has nothing to do with being healthy or unhealthy and fair pricing, it's just a matter of choice. One could also assume that most people who agree to take part in the program are healthy people and most people who opt-out are unhealthy. This can also undermine the value of fairness, since the company could end up in a situation where healthy people are only priced against other healthy people.

Question 3

What are the limitations of Selfie2Personalitys technology - if any?

There is an obvious issue in predicting political views, criminality and trustworthiness from facial features and online presence. Does the prediction take into account various differences such as if a person is smiling or not? The model will only be as good as its training data. If the entire training set for criminals is people frowning then that would end up being a skewed model, simply smile for your profile and you would be classified as "not criminal".

Making sense of the data will allow for human bias, such as if the model predicts someone is good if they are smiling and bad if they are frowning. Just as in lombroso's theories, there is no scientific ground for categorizing facial features that are inherently criminal. Correlation does not imply causation, but humans will always look for patterns where there are none.

Most likely people that have criminal intentions will not use the app leading to a skewed dataset and bad predictability.

Are there any ethical and privacy concerns with this collaboration and how may they manifest?

One could imagine that law-enforcement will have an easier time to identify potential criminals from these profiles. However, is it correct to punish people for pre-crime characteristics? Would law-enforcement use their pre-conceived notions about a persom from a certain political view when addressing them?

If they did then they might end up antogonizing the person since they are so convinced that they are criminal. This would possibly lead to a reaction from the person that can be seen as hostile, while it actually is them defending themselves for being accused over speculations.

Addressing people from a profile potentially reduces the accountability of law-enforcement. They can simply claim any wrong-doing was because they followed what the model told them. Who takes responsibility in cases such as wrongful imprisonments, if law-enforcement follows a model? The model or law-enforcement?