PYMETRICS Technical Review. Words – Meareg Hailu

Imagine playing a series of games as a part of your job application. Instead of a resume, recruiters would see your game results: your cognitive and behavioral traits that make you well-suited for a position. Tech startup Pymetrics has already made this a reality. Pymetrics is a game-based platform measuring social and behavioral results. It does this through a gamified process that provides companies with data on attributes of candidates applying for the role. It was co-founded in 2013 by Frida Polli and Julie Yoo from HBS and MIT. They were frustrated with the subjective, inefficient, and biased nature of job recruitment processes.

Companies such as Unilever, Accenture, and McDonald's have already implemented Pymetrics as a part of their job application systems. According to Pymetrics' website, Unilever has already used its platform to assess more than 280,000 applications in 68 countries and reduced the hiring time by 75%.

HOW PYMETRICS WORKS

First, it is based on solid neuroscience research that includes measuring cognitive and emotional functioning. Instead of asking questions and getting subjective answers, Pymetrics uses an objective measuring scale that provides a bias-free profile of a candidate.

Pymetrics developed games based on years of well-established neuroscience research. They have a set of 12 neuroscience mini games that take less than half an hour to measure 90 cognitive, social and emotional traits of candidates. While many traits are said to be acquired while on the job, Pymetric focuses on measuring intrinsic traits that do not change over time.

Some of the games are filling animated balloons with water without them bursting, clicking the space bar every time a green dot appears and weighing how much money to trade with an imaginary partner in a scenario akin to a prisoner's dilemma. There are no victories in this game, but rather they serve to measure the candidate's various behavioral traits to help map them to the best-fit job.

Pymetrics makes custom algorithms for companies by running their mini games on at least 50 of the organization's top performers. It then uses this model to compare and find applicants

with similar traits. Job seekers play different games when applying for a job and a matching algorithm is used to select the one which would be the best fit for a role or have similar skills to the top performers at a company. This model has been mostly employed by companies to recruit for standard entry and midlevel corporate positions.

PYMETRICS AND AUDIT AI

Pymetrics has recently open-sourced their bias detection algorithms available for download on GitHub. The tool, also known as **Audit AI**, is used to mitigate discriminatory patterns that exist within training data sets which influence or improve the probability of a population being selected by a machine learning algorithm.

Audit-AI is a tool to measure and mitigate the effects of discriminatory patterns in training data and the predictions made by machine learning algorithms trained for the purposes of socially sensitive decision processes. Audit AI was first built for internal use by Pymetrics to identify bias in custom-built algorithms the company creates for clients to determine whether a person is a good fit for a job.

There is an under-representation of certain groups across society but forcing businesses to recruit them even if they are not the right fit for the job is not the ideal solution. Instead, Pymetrics wants to level the playing field so everyone has the same opportunity. Unfortunately, the current under-representation problem is causing unintentional bias.

A 2010 study by researchers at NIST and the University of Texas in Dallas found that algorithms designed and tested in East Asia are better at recognising East Asians, while those designed in Western countries are more accurate at detecting Caucasians. Audit AI can detect this kind of bias to make the developers aware, but it will be up to them to correct it.

As more and more workloads are being automated by processes leveraging machine learning, it is important to ensure these algorithms do not develop biases that create unfair advantages. Pymetrics seeks to ensure that machine learning algorithms remain fair.

The overall goal of this research is to come up with a reasonable way to think about how to make machine learning algorithms fairer. While identifying potential bias in training datasets and by consequence the machine learning algorithms trained on them is not sufficient to solve the problem of discrimination, in a world where more and more decisions are being automated by Artificial Intelligence, our ability to understand and identify the degree to which an algorithm is fair or biased is a step in the right direction.

CHALLENGES AND FUTURE:

Pymetrics has adopted an interesting model of using games to collect large sets of data about candidates. Despite it having a big number of high-profile clients there are some challenges which it might face in the future:

- Most companies would still have an interview process after the shortlist using Pymetric where human judgment would be used - this can cause biases to play out.
- Getting Data sets of high-performance candidates might be difficult as the algorithm developed would need to be job-specific for companies to hire for a specific role.
- It is difficult to have a de-biased dataset. Datasets usually replicate a company's existing setup.
- The usage of Pymetrics cause diversity of ideas to decrease due to the skill set and personality traits of employees hired being similar.
- People might start gaming the system, by developing, playing and practicing such games to get a higher score on the traits required for the job role they want.

There are critics of the system. Some neuroscientists take issue with the science behind the games and what is really being measured. While AI can provide a good grounding for assessing people, there are those in the hiring arena who believe, in the final analysis, the human touch is still as valid as psychometrics. Candidates, too, have experienced rejection from particular companies based on their pymetrics scores, even if they possess all the relevant credentials to do the job well.

CONCLUSION

Pymetrics has managed to become a part of the hiring process for many high-profile companies like Unilever, LinkedIn, and Accenture to name a few. Some companies have more than doubled the percentage of candidates they hire out of those they invite for in-person interviews. The platform also has helped businesses increase their diversity. Pymetric's algorithms constantly test for and remove ethnic or gender biases that arise, leading to more women and minority hires. It also helps companies expand their scope beyond just those who can afford expensive college educations.