

Abstract:

The goal is to automatically recommend and assign programming problems and assignments to users based on their previous experience using Machine Learning. Data is collected from DCT Academy's coding platform. The coding platform consists of users' data of time taken to solve a problem, level of difficulty of the problem and the category the assignment belongs to. Every user will get their own personalized assignments based on the way they solve assignments. The more problems (that are easier) they solve, the more problems (harder) it gets. If a user is finding difficulty in solving easy assignments, they will get more assignments. Once they are comfortable solving enough assignments, they will get newer, harder assignments.

The coding platform exposes its APIs for us to fetch data. Data is then preprocessed and feature engineering is applied to get relevant features. The data is then trained on two machine learning algorithms. One being the Alternating Least Squares to optimize the loss function and Bayesian Personalized Ranking to come up with more personalized rankings for each user. The ranking system is done a customized confidence metric based on user's performance. The model is trained, tested and tuned for maximum accuracy. The trained model is then exposed as a REST API which serves the model. The whole process of preprocessing to building APIs is automated as a machine learning platform.

Impact:

The project is live and deployed. An internal research showed that user engagement with the code platform has increased by over 300% and their ability to solve problems have increased by over 200%. The project is currently only limited to DCT Academy's coding platform and will be made public where anyone with similar data points will be able to integrate our machine learning platform into their coding or similar platform.

Project Expansion

The project is currently being tested for accuracy and reliability. It will help every enterprise in making their day to day processes easier and accountable. Further plan is to deploy the product in any enterprise organization which strive for quality.