ENEL 682: Applied Machine Learning and Predictive Analysis

Project Reflection

Of

Diabetes Prediction Model

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Question 1: Why did you select this problem to solve?

The prevalence of diabetes, a chronic illness that affects millions of people globally, is rising. To effectively manage diabetes and stop its consequences, such as heart disease, renal failure, and blindness, early detection and intervention are essential. Large datasets of patient data can be analysed by machine learning algorithms to forecast the risk that a patient will develop diabetes and assist healthcare practitioners in making well-informed decisions about prevention and treatment options. In the fields of data science and machine learning, the subject of diabetes prediction is also well-known and has been extensively researched. The problem is approachable for academics and students who are learning about data science and machine learning because there are many publicly available datasets that can be utilised for training and testing predictive models.

Additionally, I have personally witnessed a few cases of diabetes in my surrounding, and I believe that these cases may have been avoided if individual had been aware of the signs. However, I firmly believe that it is my moral obligation as an engineer to do my part to improve and develop society, so as I had the chance to familiarise myself with the knowledge of machine learning and its application, I have chosen to find a workable solution to address this issue.

Machine learning methods like Logistic Regression, SVM, Random Forest, and Neural Networks can be utilised to create accurate diabetes prediction models. These models can help medical professionals make informed decisions and provide patients with rapid care. As a result, developing a trustworthy diabetes prediction model is an important and significant problem that needs to be handled in the medical sector.

Question 2: Where there any deviations from your proposal? Explain why or why not?

Our diabetes prediction machine learning project did have a few minor deviations from the initial schedule, but they had little to no impact on the project's overall success. As an illustration, at the beginning of the project, because we only had a basic understanding of the topic, we were unable to locate an adequate data form to supply dataset references on which we could execute our initial analysis. The primary cause of that is Possible reasons for variations include modifications to the project's specifications, unanticipated technology issues, delays in the data collection process, or adjustments to the team's availability or priorities. Additionally, to get the results, we wanted, we had to change a few of the model's hyperparameters. However, this was part of the original plan because we were aware of the difficulties we would experience and were prepared for them. Projects frequently deviate from their original plans, so excellent project management is necessary to make sure that the project's goals and objectives are achieved.

Question 3: What did you find difficult about this project? What did you find easy? What did you learn?

As mentioned in the previous response, locating high-quality data sets, choosing the right features, desire frameworks that work properly on chosen dataset, and optimising the model's hyperparameters were among the initial difficulties we encountered.

Based on my knowledge and after working on this project, I would say that I was able to improve both my technical and non-technical talents. In terms of technical abilities, I was able to gain the crucial practical expertise with a variety of machine learning techniques, including Linear Regression, SVM, Neural Network, and Random Forest. On a lighter note, I was able to gain a thorough understanding of diabetes, its varieties, and its early symptoms.

Conversely, several of the tasks were simple to do because we had already practised them while working on the assignments that were required for the entire course. The preprocessing and visualisation of data, the division of the data into a training and test set, the examination of any accessible missing data these are the some of elements.

Additionally, I've learned from working on a team project that while an issue may or may not have numerous answers, it does have multiple approaches since different people approach problems from different perspectives. Additionally, I was able to improve certain soft skills like communication, time management, and critical thinking.

Question 4: How can you apply what you learned in this course to your desired career?

Finance, healthcare, marketing, and many other professions and industries can all benefit from the application of machine learning, which is a potent instrument. For instance, machine learning algorithms can be used in finance to analyse financial data and forecast market patterns, and in healthcare to analyse medical imaging and identify disorders.

I've learned a lot of important things from this training. For example, I now understand how to clean and process data, how to use different machine learning algorithms, and how to analyse the outcomes to get the required output. In addition, I was able to improve my knowledge of programming, especially Python and its libraries and vivid frameworks.

In conclusion, I would say with confidence that completing projects has given me more self-assurance. I also think it would be rather simple for me to apply the knowledge I have gained to addressing real-world difficulties because I am already familiar with the workplace. I want to work as a data scientist after I graduate, and I think this degree has provided me with all the foundational information I need to realise that goal.