Criterion A: Planning

Word Count: 400

Identifying and Defining the Situation

Word Count: 249

Senior High School Students across the world face the difficulty of assessing their chances of being admitted to their desired college for their Undergraduate Studies. Being a student enrolled in the IBDP Curriculum, we have a career counselor and IBDP coordinator who conducts sessions with all the students. During these sessions, the teachers ask the students to decide their top 5-10 college choices. Furthermore, based on student's choices, the counselor recommends a list of colleges which he/she thinks is appropriate for the student to apply based on quantitative factors such as high school GPA, SAT/ACT Scores, IB Predicted Scores, and qualitative factors such as In-State/Out-of-State Status and choice of major.[1, 2] Conversing with my coordinator, Ms. xxx stated that students face a major difficulty in deciding their choice of colleges (hearing from my fellow students), making it difficult for the counselor to recommend which college the students should apply to.

Recognizing this situation, on conversing with the School Management Heads and my IBDP coordinator, the teachers stated that creating a product for the counselor which can predict the probability of a student getting admission into a particular choice of college based on the quantitative and qualitative factors mentioned above would help her to short-list a student's choice of colleges he/she should apply to relatively faster, more efficiently, and more

[1] Appendix: Email with client after First Meeting
[2] Appendix: Call Transcript

accurately based on the probability. With this in mind, I am designing a product based on the needs of my client, my school, with the intended user being the career counselor.

Rationale for the proposed product

Word Count: 151

I have decided to write a dedicated ML (Machine Learning) based desktop program using a programming language, rather than a web-based program, because a desktop program would ensure better data privacy and protection as the data is stored locally on the client's computer. Moreover, I have decided to use Python over other programming languages focused on ML like R and Matlab as Python offers concise and readable code, and has been the most widely used programming language for ML based applications. Python's simple syntax enables faster development of ML programs than many programming languages, and allows me to quickly test algorithms without having to implement them. Python also offers numerous in-built libraries such as Numpy, Sklearn which enable me to compute scientific calculations in an ML-based algorithm relatively quickly, Tkinter, a standard GUI Library for Python which provides a fast and efficient way to create an object-oriented GUI for the user.

Stating Success Criteria

Word Count: N/A

1. When the backend file is launched, it should be ensured that during optimization function, for every iteration the cost value should always decrease until it reaches convergence or local minimum and not increase.
2. Automatically load the weights (Theta1 and Theta2) to be used for calculation based on user's selection of college, standardized test type and high school exam score type.
3. Automatically load list of majors (drop-down list) to choose choice of major based on user's selection of college.

4. Automatically load the menu to choose In-State/Out-of-State Status based on the college selected.
5. User should be able to input appropriate values for SAT/ACT Score, Percentage, and IB Predicted Scores.
6. Validate user input for each parameter and display appropriate error in case validation returns false.
7. Based on inputs, calculate and display the probability of securing admission into user's choice of college.