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Week 1 Homework

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An interesting application of a classification model could be in the context of the university admissions process. Having recently applied to several graduate schools myself, I wondered whether an algorithm could better select students than an admissions expert, faculty member or admissions panel.

The definition of what is a "favourable" or "desirable" student is (students who the university would like in their program(s)) versus an "unfavourable" student will of course vary. Some universities may value certain traits higher than others. Some may be more interested in students' transcript and grades. Or, some universities might give more preference to academic research etc. As such, feature selection and the weights assigned to each feature will also vary. But, hypothetically, one could train (from past admissions) a model which could classify students into 3 categories: Accept, Consider, Reject. One could certainly add or reduce categories, but for the purpose of this question, let's assume 3 categories.

Possible features that could go into making such a determination could include (in no order of priority): Cumulative GPA, Last 2 Years Undergraduate GPA, Undergraduate School Ranking, Quality of Research, Recommendation Letter(s), Standardized Test Scores, Undergraduate Major, Statement of Purpose, etc.

Personally, I think a classification model in this context could easily backfire and would be prone to bias if used inappropriately. It may select the same kind of students after some time and ignore possible outliers and categorize them as "Reject" even though they might be the kind of student(s) every school desires. Let me provide an example - let's call this individual Alex. Alex does not have great academic scores or a high GPA, but his personal statement and past experience shows that he is greatly interested in social good and is planning on using his education to make a positive impact. While an algorithm may discard Alex based on his low test scores, a human would recognize the immense potential that Alex has and how well he might be suited to the program.

If a classification model in this context were to be used appropriately, perhaps as only an aide and not used as the ultimate decision maker, and if its thresholds were set appropriately so that it would take into account outliers like Alex, then it could augment the decision process which would otherwise have been delegated completely to humans. Such a model might only categorize students in the "Accept" category if they were truly exceptional in all regards. It might put students in the category "Consider" even if there is only a small chance that they could be desirable, perhaps on the basis that they have done exceptionally well in any of the criteria. And only those who clearly do not meet the requirements of the program are then, and only then put into the "Reject" category. While these thresholds might mean that the majority of students are put into the "Consider" category, many of whom will likely not be selected for admission, at least schools will be considering all worthy candidates and not missing out potentially great students (high recall).

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