An Automated University Admission Recommender System for Secondary School Students

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1 Paper trivia

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- Length: 6 pages, experimental

2 Problem description

The paper addresses the problem of suggesting universities to secondary school students based on their profiles and other factors. It presents a hybrid model of neural network and decision tree classifier that serves as the core design for a university admission recommender system.

3 Motivation and (potential) applications

The choice of a university that is suitable for a given secondary school graduate can be a difficult decision to make. Reputation of the university, perceived difficulty of the degree program, distance from home, tuition and living costs, students areas of academic strength as well as actual scores achieved are just some of the factors that may be considered by a student graduating from secondary school. Each university has its own set of admission criteria. Therefore suggesting the right candidates to a university or the right university to candidates is an important process.

4 Related, similar and background work

Most existing studies of university admission are based on the perspective of universities who are to receive the new incoming students, and not on the perspective of secondary schools that are sending their students to pursue higher education,

5 Main techniques of the paper

Three classifiers were used

- C4.5 Decision Trees
- Neural Networks
- Proposed (hybrid) classifier

Precision and Recall were used as measures for estimating the performance of these classifiers on different classes. These two were combined to derive the F1-measure A 10-fold cross-validation was used to carry out all the experiments, and averaged the results over 10 runs.

6 Dataset

The system was trained and tested with live data from sources of Macau secondary school students. As mentioned above the secondary school data of a student is more important in determining the right university for the student and not just the univeristys admission test scores.

7 Evaluation and Results

F1-Measure performances F1-measure was calculated for each classifier across different universities such as universities in Asia, Taiwan, Macau and other overseas universities. It was seen that the hybrid classifier model achieved a high F1-Measure value ranging from 93% to 96% in both cases as compared to other classifiers.

8 Limitations of this paper

The decision rules used in the paper should be more comprehensive and the results derived in the paper are from the data of secondary schools in Macau. The system should be evaluated with more comprehensive and diverse dataset so that it can be used generally by universities/schools from all over the world.

9 Main achievements of this paper

Education systems which do not have a standardized open exam for university admissions face the challenges of matching the right secondary school students with the right universities and the ways that they should enter. This implies some manual processes are needed and the decisions made are relied on human intuitions. Hence inaccuracies bound to happen.The paper has provided a recommender system that analyzes various sources of secondary school students data, in order to predict their chances of admissions to universities.