



College Course Ranking Based on Student Feedback

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INTRODUCTION

Course selection is an important thing for college students. While courses with good contents and moderate difficulties are more preferable, the reputation of the course also matters a lot. However, few tools are available in the market now to automatically collect the reputation information of courses. Students must search for those feedbacks manually, which is a very tedious process.

The goal of this project is to collect feedbacks about courses at the University of Michigan and rank the courses based on the sentiment classifications of the feedbacks. This project serves as a reference for students to look at when they choose and decide which classes to take.

DATASET SELECTION

Go et al. [1] used 500 Twitter posts in 2009 as the original training set for their sentiment classification. This set was manually evaluated. Every post was labeled as either negative, neutral, or positive. It perfectly fits the approach of our project. Moreover, Twitter posts share similar features with Reddit posts, so we decided to use this set to train our Naive Bayes algorithm.

METHODS

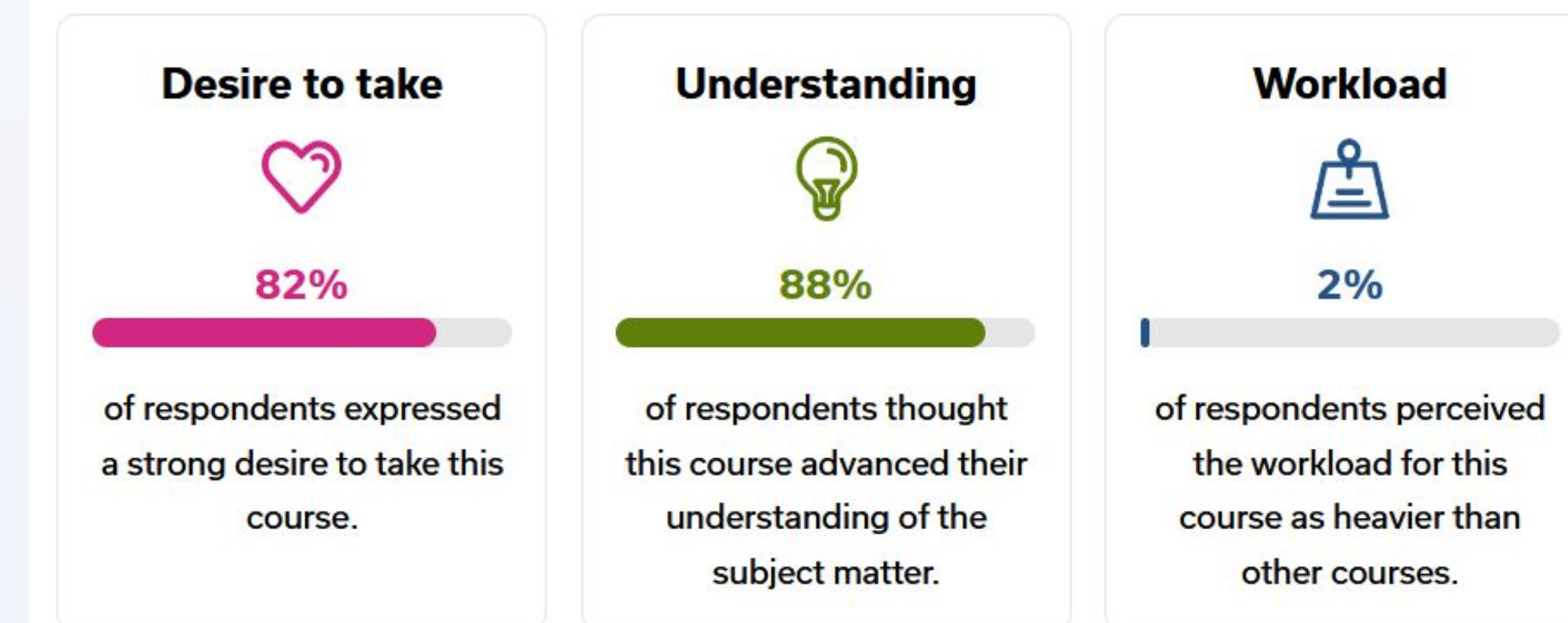
Atlas Crawler

Atlas provides many statistics about the courses. It's a good starting point.

Course Evaluations

[Learn more about evaluation data on our about page.](#)

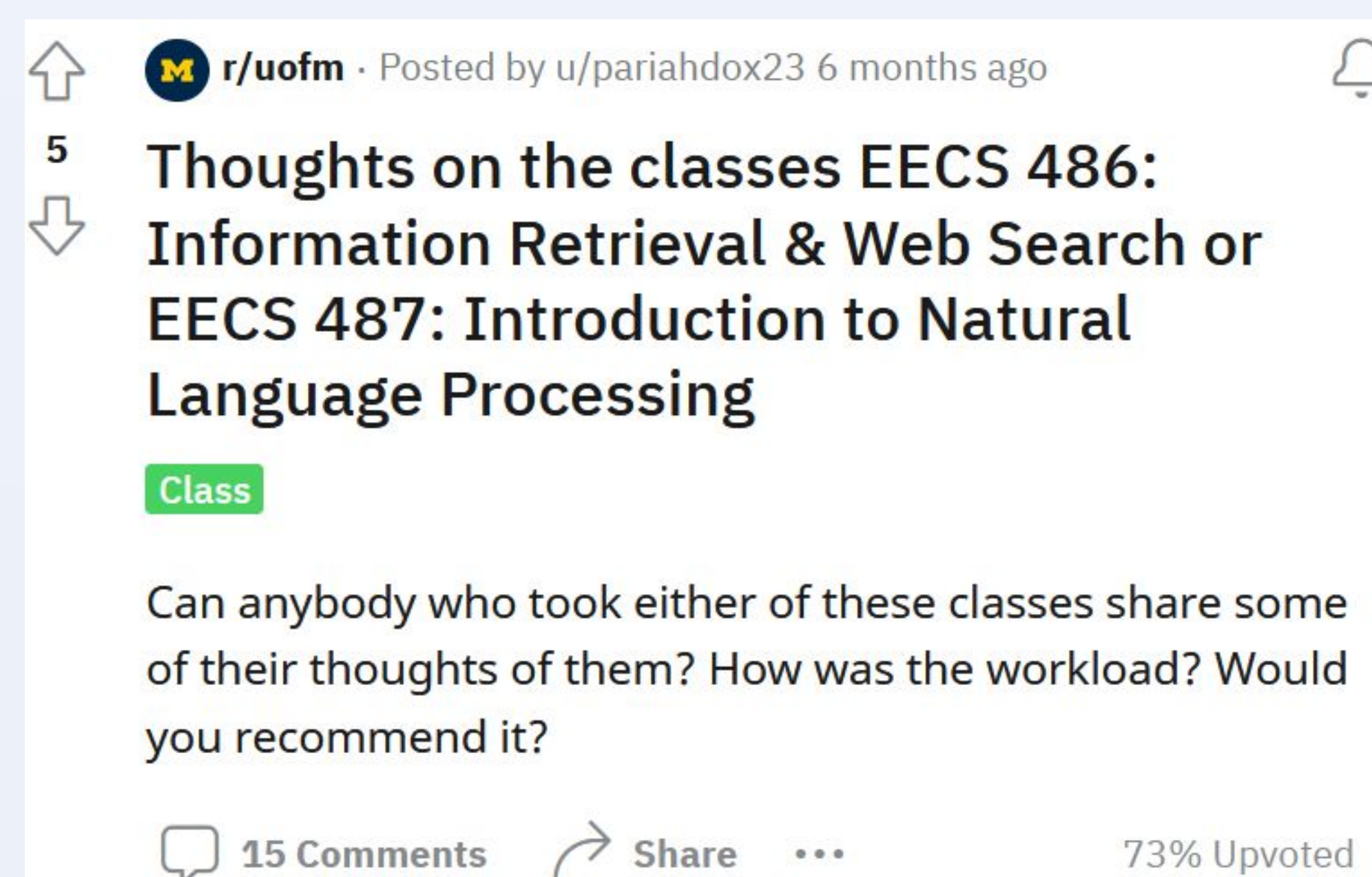
298 of 1372 students (22%) responded.



A file of interested course links on Atlas is provided by the user and fed into the crawler, which crawls the related courses and collects data such as median grade, understanding, expectations, etc. All scores are averaged to define a starting weight for each course.

Reddit Crawler

The reddit crawler utilizes the reddit API to gather discussions from the uofm subreddit about the courses crawled by the Atlas Crawler.



Naive Bayes Classification & Score

A naive bayes algorithm is then used to classify each reddit post. Each post is classified as either negative, neutral, or positive. The final score for each course is calculated as

$$Score = \frac{\#Neutral + 2 \times \#Positive}{\#All\ Feedbacks} \times Atlas\ Weight$$

The final ranking is based on the scores in the descending order.

RESULTS

Sentiment Classification Evaluation

By manually looking through a subset of the sentiment classification outputs of our Naive Bayes algorithm, we derived the following data:

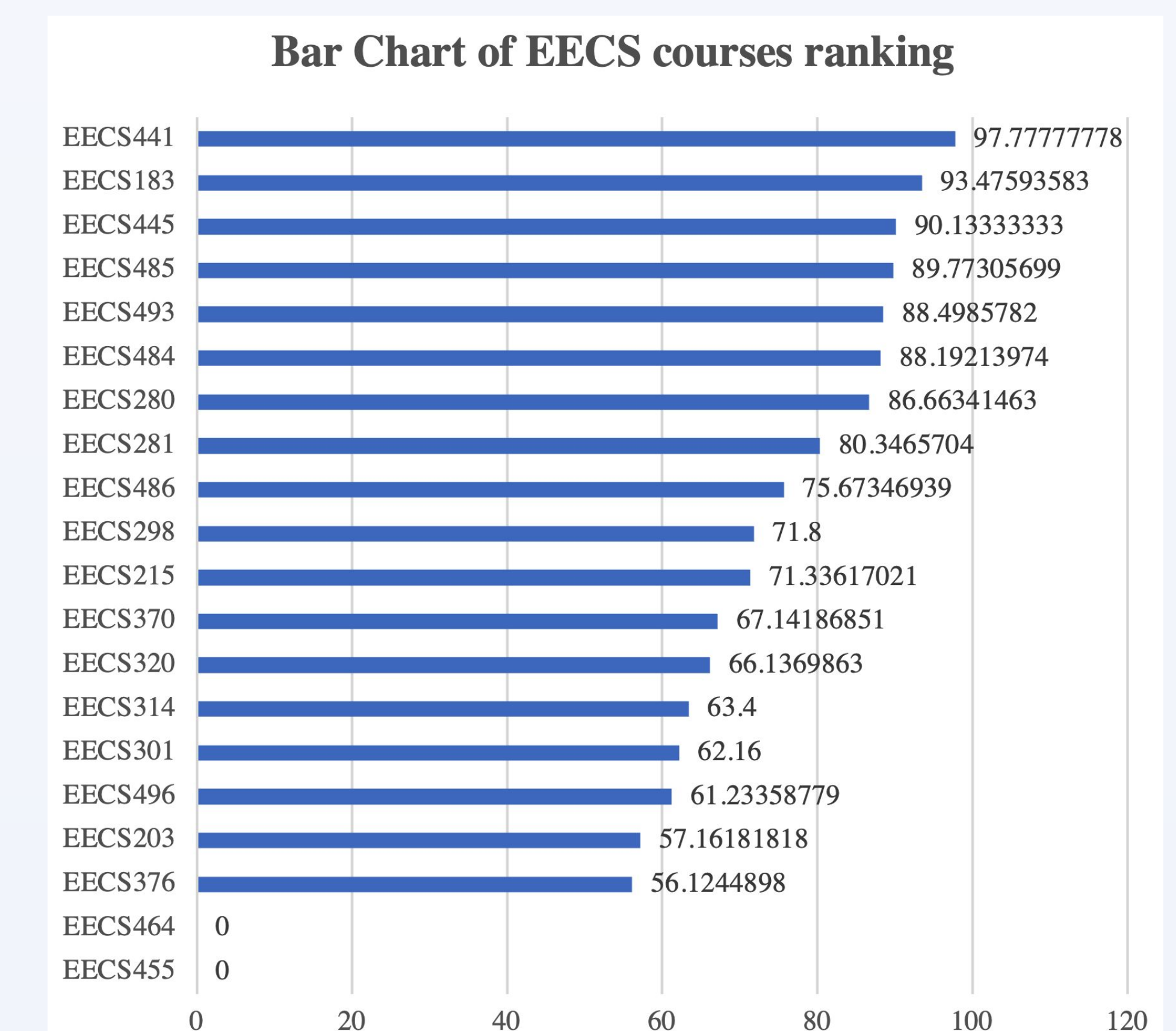
	Precision	Recall
Positive	0.50	0.63
Negative	0.39	0.82
Neutral	0.67	0.10

Some observations are found:

1. It is harder to correctly identify the neutral feedbacks than the polarized opinions. People may use emotional words when just stating the facts.
2. Comments on Reddit can be really complicated. It is difficult for Naive Bayes algorithm to identify if a comment is serious or just joking.
3. The Twitter posts in the training set are still not so similar to the Reddit discussions about courses. We believe that a training set with a more related topic will improve the performance of our classification.

Course Ranking

The chart below shows scores and rankings of selected courses among 110 EECS courses.



CONCLUSIONS

Achievements

We built a suite of programs that collect related courses' information based on the users' seeds, and rank the courses according to the sentiments of their student feedbacks.

Future

In the future, we plan to increase and refine our training set to make more accurate predictions. The algorithm to assign scores can also be further trained and improved.

REFERENCES

[1] Go A, Bhayani R, Huang L. Twitter sentiment classification using distant supervision. CS224N project report, Stanford. 2009 Dec;1(12):2009.