

Senior Project Ideas

If you are interested in working with me on a senior project feel free to just send me an email or come by my office and we can chat about it. I have provided a couple ideas of projects I find interesting or challenging. If you have another project at least somewhat thought out and you want to work with me about it come see me and we'll take a look at it.

-- Christian Roberson

Netflix Predictions

There is a contest out there to more accurately predict Netflix predictions than Netflix does. If you want to read about it check out www.netflixprize.com. Basically you are given information on about 18,000 movies and ratings provided by about 500,000 people. It isn't a complete list though, and only has about 100,000,000 ratings in it. The goal is to use this information to try and guess how other ratings would come out.

This project involves creating a framework for interacting with the Netflix data and being able to learn more about user and movie trends, apply various levels of prediction techniques, and generate predictions and analysis of those predictions. It isn't a flashy project, but there are a wide range of applications for this kind of problem and if you are interested let me know.

Automated Project Evaluation/Feedback System

Have you ever wished you could have a better idea of if your HW Project is right before you get a grade back for it? Obviously if we would just give you all the test cases we planned on using that would be great, but it isn't going to happen. But this might be a good middle ground.

This project involves creating a system designed to accept project submissions and provide near-instant feedback to the submitting student. From the student's perspective they should be able to submit in a variety of ways (web page, network, etc.) and get back limited information about their program when evaluated against the test cases such as: cases passed/failed, errors that occurred (compile or runtime), and which cases failed. From the instructor's perspective it should support different languages/environments for projects, provide a useful system for creating test cases, reports on student usage and program evaluation.

Programming Contest Tools Suite

The annual ACM ICPC is a fun contest designed to test students' skills in a timed environment. One of the keys to success in this competition is practice. While there are some sites out there that provide this functionality, I think having a local set of tools would be nice.

This project involves creating a system and/or integrating existing tools into a suite capable of helping with various aspects of this contest. Ideally the system should support automatic problem submission, judging, scoring, etc. This should be in both the standard contest format and in week-long "work-at-home" problem sessions. Various submission methods should be

allowed and the system should be capable of keeping statistics on the various problems and students participating. Various other reporting would be included.

PokerBot (or any other sort of GameBot)

Have you noticed how Texas Hold'Em has become very popular in the past few years? Well I am no exception, and am fascinated by the game. But you'll notice that in many cases it is very difficult to get a computer to play a game well, especially one that involves subtle intricacies or understand the other players in the game.

This project involves creating a bot or AI system capable of playing poker (or some other game) and ideally playing it well. Part of this project will involve analysis of why the bot does well or does horribly and discussion of what in particular is easy/difficult about the game for computers.

CS & T Department Online Advising and Degree Audits

Ever wonder exactly what you need to graduate? Wish you could get advised quickly and efficiently online, or at least work out a preliminary schedule ahead of meeting with your advisor? I think would be an extremely useful tool to have an online system that could give you advice to help with scheduling, let you design and print your schedule, see how your courses will apply towards your degree etc.

This project involves designing and implementing one or more major pieces of the system above. A web-based interface would be preferred and to store the system some knowledge to DB design would be needed. Some possible sub-projects include: a degree requirements-checker and report generator, an online interface for adviser course discussion, an automatic course recommendation system (probably requires degree verification and course information pieces done), tools for maintaining accurate and up to date course and degree information, and so on.