Economics and Computer Science Coursework

Data Structures and Advanced Programming
Mobile Application Development
Principles of Programming Languages
Theory of Computation
Statistics and Data Analysis
Econometrics
Computer Organization
Algorithm Design & Analysis
Operating Systems
Protecting Information (Cryptography)
Applied Real Analysis
Global Competitive Strategies

Past and Current Projects

Honors Senior Research: Learning Domain Models from Partially Observed Action Sequences

- Performing research on extending extant algorithms that learn domain models from partially observed intermediate state information to learning models from sparse descriptions of action sequences.

Laundry List Mobile Application

- An Android application in development that helps individuals pictorially track which outfits had already been worn for the week.

QuickQues Mobile Application

- An Android application in development that crowdsources human intelligence for the purpose of answering questions, with a monetary bounty being placed by the asker.

LoGro

- An achievement-sharing website for students looking to privately or publicly share accomplishments with friends. The backend is being developed using the Ruby-on-Rails framework.

Queuer Mobile Application

- In coordination with a team, I developed a task-manager application for the Android market using the AGILE development methodology. The application helps individuals organize "to-do" lists for specific projects that the user inputs. It utilizes standard Android tools such as Volley, GSON, and the SQLite database.

Speech Recognition Program

- Developed a program that used open-source speech recognition technology, in particular CMU Sphinx4, to hold conversations with human users. The program, user independent in application, utilized existing speech conversion utilities involving HMMs and a BFS algorithm to search a graph lexicon for phonemes that would be strung together into readable strings. In my implementation, a user would verbally ask the program questions. It would first interpret the spoken question then search a binary tree of possible responses using grammars that I defined for its use. If an unexpected response were recognized, the program self-updated the grammars it was using and adjusted the tree accordingly. In this way, a program that had simply been made to recognize speech as – opposed to understanding speech – could now learn from its users.

WARM Emulator

- Wrote a virtual emulator for the WARM assembly (RISC) instruction set entitled WAVE using the WIND (CISC) assembly instruction set. WARM is a language similar to the ARM instruction set and WIND resembles Intel x86-64 instruction set – both languages were authored by Duane Bailey.

Williams Student Online

- I develop and configure different aspects of Williams Student Online (WSO), a student-run online campus resource (http://wso.williams.edu). In particular, I approve posts, moderate, and develop the professor evaluation portion of the website, FacTrak, and am now working on developing Android and iOS applications of the website for the mobile phone.