SE 494

Fall 2017

Portfolio Project Narrative Assignment

Due date: Oct 13, 2017

Submission of portfolio project descriptions via Blackboard

Recall the description of 3 projects to be included in your portfolio: Minimum of 3 Individual or Group Projects from classes/lab

i. Emphasize design processes and show final designs or application
ii. Define skills/tools acquired in all your examples
iii. Submit one paragraph narrative per project

1. Prep4Tech

Anyone pursing a job in computer science most likely has to master a specific type of technical interviewing. Similar to public speaking, it's not the same practicing in front of the mirror as it is when practicing in front of an audience. At HackISU Fall 2016, three other students and I created a web application called Prep4Tech that allows job applicants practice technical interviewing with a live code editor and peer-to-peer video stream. This application was built with NodeJS, Firebase, WebRTC, React, and SemanticUI CSS. As the team's front-end developer, I used Facebook's JavaScript view library, React, to build modularized and reusable front-end components. Coupled with React-Router, I created a dynamic dashboard and friend management interface. With Prep4Tech, we won 4 different awards at HackISU: 2nd place overall, Google's Googlest Idea, John Deere's Consumer Innovation and Workiva's Best Cloud Integration.

For this project, we relied on a lot of online documentation. Prior to this competition, none of the team members had worked with WebRTC, SemanticUI, or Firebase. Because some of the team members had been interviewing at the time, we knew of an existing application called P.R.A.M.P. We used PRAMP as a model for our application and improved on their features.

2. University Course Planner / CyPOS

Around the middle of each semester, students are asked to register for the following semester's classes. Even though departments offer 4-year-course-plans, most students find themselves off the designed track. With numerous elective requirements and unique graduation requirements, it can be easy to take classes in sub-optimal sequences. In attempt to automate future course planning, I created the University Course Planner (aka CyPOS). A user would input the course they had already taken along with the major they wish to graduate with. Using that information, the University Course Planner would then

generate a schedule of future courses they needed to take and in what semester they would need to take them to ensure minimal graduation time. This project was created using Python, Django Web Framework and a MySQL database. Checking course prerequisite, co-requisite, and substitutable requirements was time consuming. In order to optimize, I utilized a priority queue and various hash tables.

For this project, the team relied on a lot of online documentation because none of the team members had prior experience with web development. We used a lot of Django's online documentation along with MySQL's documentation. Our professor, Sim Mitra, helped us organize the project and keep on schedule.

3. Othello AI Agent

For an artificial intelligence course, I created an intelligent agent that would play the classic board game, Othello, with you. This intelligent agent used an algorithm that would search all possible moves, prune sub-optimal branches preemptively, and return the move that maximized the agent's game score. This project was written in Java. I enjoyed this project because it was a concrete realization of AI's capabilities and the algorithms that power intelligent decision making.

For this project, I referred to the book, *Artificial Intelligence: A Modern Approach*, for guidance when building the AI algorithm. I also used Java's online documentation.