Ankita Kalkar

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA, May 2023
Bachelor of Science in Electrical and Computer Engineering (ECE), Additional Major in Robotics

EXPERIENCE

InStep Software Engineering Intern *June 2021 – August 2021*
Infosys

- Researched various quantum computing and quantum mechanics principles within the Quantum Finance field
- Developed a Quantum Python program to extract unstructured financial data using the Natural Language Toolkit library
- Used Qiskit (IBM's official Quantum Computing software) to develop proof of concept solutions to QUBO optimization problems
- Analyzed various machine learning and neural network techniques on classical and quantum computers to improve efficiency and observe computational differences

Supplemental Instruction Leader for 21-259 *August 2020 – Present*
Carnegie Mellon University

- Led content review sessions of 10-20 students that covered various multivariable Calculus concepts
- Engaged students by creating packets and designing activities to stimulate virtual learning

Teaching Assistant for 18-100 *August 2020 – December 2020*
Carnegie Mellon University

- Managed groups of 5-6 students and met bi-weekly to review material covered in lecture
- Performed various lab demonstrations of basic ECE systems and assisted in the grading and formulation of labs, homework, and exams

PROJECTS

Robot Kinematics and Dynamics Capstone *Nov 2021 – Dec 2021*

- Programmed a 5-dof robot arm's kinematics and created a system that followed a constrained path through space
- The robot was programmed to pick up Jenga blocks from a feeder and place them to build a tower 6 layers high, with each subsequent layer being rotated 90 degrees.
- Key concepts utilized includes: Manipulability, Denavit-Hartenberg Transformations, Robot Control using trajectories, and 3D Inverse and Differential Kinematics.

Fundamentals of Control Midterm Project *Oct 2021 – Nov 2021*

- Autonomously controlled an AV robot to ensure safety while avoiding obstacles on a slippery surface. Utilized LIDAR sensors, raspberry pi, and IMU sensors to program the AV's throttle and steering functions using a closed-loop system and by defining the state space representation of a lateral model.

Spotify Playlist Maker *June 2021 – July 2021*

- Used Spotipy, a Python library for Spotify's Web API, and flask to create a program that takes multiple people's usernames and creates a playlist that combine's each user's unique music taste as well as prints a compatibility score.

15-112 Term Project (https://youtube/DG7t0pSP4bg) *April 2020 – May 2020*

- Independently developed an audio-visualizer game of approximately 1000 lines of Python code over the course of a month in Processing Programming Environment
- Implemented a slightly modified Fast Fourier Transform algorithm to isolate the RMS, amplitude, frequency, and overall energy from a user-inputted sound

ACTIVITIES

Engineers Without Borders *Fall 2020 - Present*
Society of Women Engineers (SWE) *Fall 2019 – Present*
Women in ECE (WinECE) *Fall 2019 – Present*
HackCMU (hackathon) *Fall 2019*

SKILLS

Software/Hardware: Arduino, AutoCAD, MATLAB, SolidWorks, Autodesk Fusion360, ANSYS, Node JS, MS Office,
Programming: Python, C, Java, Assembly, PHP, SML
Certifications: AWS Certified Cloud Practitioner