JOSEPH OU

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EDUCATION

University of California, Santa Cruz - *Computer Science (B.A.)*

SKILLS

Programming C/C++, Python, Java

Operating Systems Windows, UNIX, freeBSD, OSX, Android

Embedded Systems Technologic Systems TS-7250v2, Arduino Mega 2560, Arduino Uno, Raspberry Pi

Languages English, Conversational Mandarin Chinese

EXPERIENCE

Undergraduate Researcher - UCSC BSOE Deferrable Load Testbed/Sensor Network — Fall 2015 - Spring 2016

I worked with a team to implement an asynchronous sensor network as part of a microgrid testbed for simulating and testing frequency excursions in electric loads, as well as to be used as a smarthome network and controller for UCSC/Cabrillo College's entry in SMUD's Tinyhouse Competition. As part of the project, I:

- Designed firmware to control sensors, as well as assisted in implementing 802.15.4 wireless modules
- Implemented a synchronous network on Technologic Systems TS-7250v2 single board computer with dynamic detection and management of three types of sensors
- Utilized the MySQL python API to communicate with UCSC's CenSEPS database
- Implemented an MQTT Protocol broker and clients based off the Eclipse Foundation's Mosquitto Project and Paho MQTT libraries for asynchronous networking with arbitrary sensor and web client count
- Utilized modular design: all sensor network components communicate over TCP in a distributed system

Developer - Bunkasoft — Fall 2014 - Winter 2015

As a developer for Bunkasoft, I worked on feature design and UI/UX design for our game, Utu.

Undergraduate Research Assistant - UCSC Bionics Lab — Summer 2014

I coordinated with UCSC's Bionics lab to implement games to assist medical patients with physical therapy. Using the Chai3D API, we implemented functionality with a haptic feedback stylus to simulate touch, friction, and resistance of 3D objects in space.

RELEVANT COURSEWORK

Computer Science 102: Introduction to Analysis of Algorithms — Winter 2015

- Utilized Divide and Conquer programming to solve problems with runtime constraints
- Utilized Greedy algorithms as a heuristic to find and prove naive optimal solution to scheduling problems
- Kruskal's algorithm and Prim's algorithm to establish minimum weight spanning trees
- Utilized Dynamic Programming techniques to solve problems such as the Knapsack problem
- Modeled transportation networks and applied Ford-Fulkerson's algorithm to determine max traffic flow

Computer Science 121: Android Applications — Winter 2016

- Utilized Rest APIs to send and receive data between Android app and server
- Implemented a "whack-a-mole" style game in Java using Android Studio
- Integration with Facebook login, sharing, and analytics

OTHER COURSEWORK

Artificial Intelligence, Android Applications, Web Applications, Introduction to Software Engineering, Introduction to Operating Systems, Fundamental Compiler Design, Introduction to Analysis of Algorithms, Comparative Programming Languages, Algorithms and Abstract Data Types, Logic Design, Applied Discrete Mathematics, Introduction to Data Structures, Computer Systems and C programming, Computer Systems and Assembly Language, Robot Automation