Ivan Cheng

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EDUCATION

UNIVERSITY OF BRITISH COLUMBIA
B.ASc in Electrical Engineering
Sep 2017 - Apr 2022
Vancouver, BC, Canada

COURSEWORK

Computer Communications
Introduction to VLSI Systems
Power Electronics
Digital Systems Design
Circuit Analysis I/II
Intro to Microcomputers
Systems Software Engineering
Data Structures and Algorithms
Stochastic Signals and Systems
Signals and Systems Control
Electronic Materials and Devices
Electromagnetic Fields and Waves
Semiconductor Lasers
Electro-Mechanical Energy Conversion
Economic Analysis of Projects

SKILLS

PROGRAMMING

Python • React • C • C++
JS • Java • HTML • CSS • SQL
SystemVerilog • Assembly

SOFTWARE

AWS • Git • Wireshark • MATLAB
Simulink • TortoiseSVN • VSCode
Altium • LTSpice • STM32Cube
PSIM • UML • Cadence Virtuoso
Vim • MPLAB X • SolidWorks

EQUIPMENT

Oscilloscope • Soldering (hot air/iron)
3D Modeling/Printing • Arduino
Function Generator • Woodworking
Metalworking • Hardware Debugger

EXPERIENCE

UBC - ECE DEPARMENT | Research Intern

Sep 2020 - Dec 2020 | Vancouver, BC

- Wrote program to translate Python into SystemVerilog for creating FPGA stress test circuits (ring oscillators)
- Wrote C to sample measurements/stress FPGA test unit
- Participated in daily scrums (Agile), using Trello/Confluence
- Worked on schematic and PCB layout of test fixture in Altium Designer, accounting for signal integrity/power requirements

ETC - ECHOFLEX SOLUTIONS | Embedded Engineering Intern

May 2019 - Dec 2019 | Squamish, BC

- Wrote code for PIC MCUs in C (1-Wire Communication, I2C), reducing idle power draw to extend battery life of products
- Debugged/validated products by creating test and assembly procedures
- Created schematics and PCB layouts in Altium Designer (op-amp circuits/ linear regulators)

EXTRACURRICULARS/PROJECTS

UBC FORMULA ELECTRIC | Electrical Team Member

Sep 2018 - Sep 2020 | Vancouver, BC

- Used Altium Designer to create schematics/PCB layouts
- Went through design reviews, used Git/TortoiseSVN for revision control
- Used Confluence, Trello and Slack for keeping up to date on meetings/tasks

SOLAR-POWERED ALEXA BLINDS

- Created database in DynamoDB to store blind state (height/direction) as JSON
- Created React web app/Alexa skill for user to control blind, user commands are uploaded to S3 bucket through REST API/Lambda function
- Wrote Python script that runs on router (Jetson Nano), allowing it to get state of blind/send commands to blind (STM32) via BLE
- Wrote blind firmware in C, enabling height adjustment based on ambient light read by lux sensor, as well as communication through BLE/serial

PICTURE GUESSING GAME

- Built web app game in React, hosted on AWS, where player guesses what an image is, gradually showing more of the image for each incorrect guess
- Created REST API with AWS API Gateway and Lambda to get daily image/word bank/answer for game from S3/DynamoDB

AUTOCHECKOUT WITH CAPTCHA BYPASS

- Used Selenium and Python to automate adding item to cart/checkout info
- Used IBM Watson to turn Captcha speech into text, automating verification
- Reduced checkout time to increase likelihood of purchasing in-demand goods

3.5 DOF SCARA ROBOT

- Simulated control loop of motor/driver circuit to tune PID in Simulink
- Used MATLAB scripts to help tune PID (find root locus, etc.)
- Created schematic/PCB layout for motor driver circuit in NI Multisim, accounting for current requirements of motor
- Created SolidWorks model of device for co-simulation with Simulink/SimulationX to account for non-linear behaviour