YILUN BAI

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EDUCATION

University of Waterloo(UWaterloo), Waterloo, ON, Canada Sept. 2018 - Present
MMath in Computer Science
Courses: OS, Algorithm, HCI, Software Requirement, Data Structure in Health, Network, IOT

University of Washington(UW), Seattle, WA, USA Sept. 2013 - Jun. 2017
B.S. in Electrical Engineering (Embedded Computing System)
Courses: Computer Programming, Data Structure & Algorithm, Computer Architecture, Hardware/Circuit Design, Embedded System, Linear/Digital System

SKILLS

Programming: Java, C, C++, Python
Hardware Description Language: Verilog, SystemVerilog
Other experience with: Socket Programming, Bash, UX/UI Design, GitHub, AutoCAD, Microsoft Office, Keil ARM-MDK, NI MultiSim, Arduino, BLE, FPGAs, Circuit Design, PCB Design, Soldering

RESEARCH EXPERIENCES

Case Study on UWaterloo's Quest, UWaterloo Jun. 2019 - Aug. 2019
Researcher

- Analyzed the system from both Requirement Engineering(RE) and User Experience(UX) perspectives.
- Detected problems, consulted with the developers and gave out suggestion and solutions.
- Presented the case study in class, wrote a conference-sized paper on it, and got a 99% grade.

Sensors, Energy and Automation Laboratory(SEAL), UW Jan. 2017 - Sept. 2017
Researcher, Embedded System/Software/Hardware Engineer

- Created a portable Total Exposure Monitoring Unit-Optical Particle Counter(TEMU-OPC).
- Designed a circuit that measures the light scattered intensity when a particle passes through a laser beam, including a current-to-voltage converter circuit and a signal amplifying circuit.
- Designed and wrote C code for the communication board, including Arduino MCU, micro SD card storage and Bluetooth Low Energy(BLE) real-time communication with an Android device.
- Drew PCB design using EAGLE and performed testing of the circuits.

Shenyang Renxian Communication Technology Co. Ltd, China Aug. 2015 - Sept. 2015
Embedded System Engineer Intern

- Programmed with STM32 Firmware driver.
- Tested SIM800L GSM module via UART in STM32F4 Discovery board.
- Transferred phone calls and forwarded short messages by AT command.

PROJECTS

Billie - Bill Is Easy, UWaterloo May 2019 - Aug. 2019
Team Leader, UX Designer

- Designed a mobile application that helps users to keep track of all the personal and shared bills.
- Conducted exploratory studies and interviews for design ideas and evaluations.
- Made paper prototypes and an interactive high-fidelity prototype using Proto.io.

SRS for E-Catalog System, UWaterloo Jan. 2019 - Apr. 2019
Team Leader, Software Requirement Engineer

- Designed a E-Catalog system that catalogs physical items on a web-based database system.
- Drew Use Case Diagram, Sequence Diagram, Domain Model, and State Machine Model of the system.
- Documented all the features, use cases, requirements, and quality attributes of the E-Catalog system in a Software Requirements Specification(SRS).

SkinCare, UWaterloo Feb. 2019 - Apr. 2019
Team Leader, UI/System Designer

- Designed an online melanoma detection and diagnosis system for dermatology service by combining results from the existing image processing method for skin lesion detection and online dermatologists.
- Created a portal for users to self-upload skin images and a portal for online dermatologists to perform melanoma diagnosis.

DiaperBELL, UW Mar. 2017 - Jun. 2017
Team Leader, Hardware/Software Engineer

- Created a smart wearable baby/elderly diaper monitor device using color and thermal sensors.
- Developed an Android application that communicates in real-time with the hardware using BLE.
- Tested 50 wet diapers and got an 100% detection rate and an average alert time within 45 seconds.

Electrocardiograph Display & Recording, UW Jan. 2017 - Mar. 2017
Team Leader, Software/Hardware Engineer

- Built an amplifier circuit as an Electrocardiograph(ECG) and interfaced it to Teensy 3.1 along with BLE data transmission and SD card writing and reading capability.
- Accurately sensed heart rate, gave Arrhythmia diagnoses and displayed the real-time ECG on a LCD.

ARM Pipelined CPU, UW Oct. 2016 - Dec. 2016
Team Leader, Hardware Engineer

- Designed a 64-bit ARM CPU with Pipelining that could operate 5 different stages of 5 instructions in one clock cycle. Significantly reduced the clock cycle time of the processor by 40%.
- Passed benchmarks for testing 10 instruction set combinations.

Elevator Controller in FPGA, UW Jul. 2016 - Aug. 2016
Hardware Engineer

- Used Quartus Prime to write a SystemVerilog program for the elevator system in Electrical Engineering building and loaded it into a FPGA chip on an Altera/Terasic DE1-SoC development board for testing.
- Handled the priority queue of the target floors by first going to all destination floors in the current direction of the elevator.

RFID Menu Book, Shenyang Nov. 2011 - Dec. 2012
Team Leader, Hardware Engineer

- Created a new self-ordering system with low price and high efficiency by implanting RFID chips in traditional paper menu book and programming a pen shaped RFID reader to identify dishes.
- Solved the collision between stacked RFID inlays by combining metal film and ferrite radar absorbing film in between layers of each page.
- Filed a National Utility Model patent.
- Won the Gold Medal in the 7th International Exhibition of Inventions.