Zihao Pu

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EDUCATION

University of British Columbia (UBC) **Vancouver, Canada**

Bachelor of Applied Science in Electrical Engineering *Sept. 2018 - May 2023(Expected)*

Core Courses: Vector Calculus, Multivariable Calculus, Differential Equations, Microcomputer Architecture, Data Structures and Algorithms, Digital Systems Design, Electronic Circuits, Circuit Analysis, Signals and Systems, Systems and Control, Computer Architecture, Advanced Digital VLSI Systems

Selected Honors: Dean's Honour List, ECE, UBC Vancouver 2021&2020; Outstanding International Student Award, UBC Vancouver, 2018

PROFESSIONAL EXPERIENCE

Huawei Technologies CO., LTD **Shenzhen, China**

Hardware Engineer (Intern), Optical Line Terminal Hardware Design Group *Jul. 2021 - Apr. 2022*

- Contributed to product design process from start to end, including design, verification, documentation, and product release
- Managed FPGA/CPLD glue logic development and testing for multiple products
- Designed and proposed several verification-automation processes, which significantly decreased the average verification time from seven days to one day
- Authored design specifications, reports, and release documentation for product updates and releases
- Performed hardware testing and validation using a multimeter, oscilloscope, spectrum analyzer, logic analyzer, and phase-noise analyzer

RESEARCH EXPERIENCE

Molecular Mechatronics Lab, ECE, UBC **Vancouver, Canada**

Undergraduate Research Assistant *Sept. 2022 – Ongoing*

- Researched capacitive sensors and applications through academic papers and then summarized core methods and findings
- Applied capacitive sensing technologies to measure pressure and shear force on robot skins
- Designed an innovative soft insole sensor using capacitive sensors, which could detect both orthogonal pressure and shear force in real time to advance studies of athletes' movements
- Developed a robust application to read, display, and log data from the sensors on Apple devices using XCode

PROJECTS

Fully Simulated SCARA Robot *Jan. – Apr. 2021*

Embedded Developer, PCB designer, System Designer

- Designed a 3.5 Degree of Freedom SCARA Robot with one parallel arm, one wrist, and a controller box containing a microcontroller and power supply using a parallel design
- Utilized SolidWorks, Fusion 360 and Multisim/Ultiboard for the design and utilized MATLAB, Simulink, and SimulationX for the co-simulation process
- Implemented Arduino embedded code to control three motors separately, and proposed a method to measure the performance and speed of the robot
- Implemented an interactive simulation model, which led our team to become the only team to complete the project and receive standout praise for design, animation, model, and control; Achieved score of 91% compared to class average of 75%

Coin Detecting and Picking Robot
Mar. – Apr. 2020

Project Leader

- Led a five-member team to develop a car-like coin-detecting and picking robot with both auto-controlling and manual-controlling modes
- Architected the system and held training sessions to explain architecture to team
- Designed and implemented the logic to control motor, detect coins, and control arm
- Designed hardware and software of remote controller using a 2.4GHz signal transceiver module
- Integrated five LEDs on the EFM8 board to display numbers of the picked coins, implemented a fast binary method to calculate the number of picked coins; Added an LCD to display the direction of the car using the MSP430 board and implemented the LCD to print the required information
- Authored and proofread the final report, with the project receiving 100% in the course assessment (course average: 84) for outstanding performance

Reflow Oven Controller
Feb. – Mar. 2020

Project Leader

- Led a six-member team to design and develop a reflow oven controller to solder SMD PCB
- Designed a compact and reliable program using MCU-51 assembly language on LPC3951 which utilized a "modular programming" approach that streamlined the integration process and considerably decreased the debugging time
- Proposed and designed features, including reflow soldering process, user-set profile, dedicated user interface, and uplink to PC through a serial port
- Designed and performed product verification using simulation and worst-case testing to validate functionality and reliability of temperature control, profile setting, and user interface
- Achieved 100% in-course assessment (course average: 84) for exceeding the instructor's expectations

PROFESSIONAL SKILLS

Technical：

- Programming Languages: MATLAB, Python, C/C++
- FPGA/ASIC: SystemVerilog, ModelSim Simulation, Cadence Virtuoso
- Embedded System Design: STM32, Arduino, MCU-51
- Circuit Design: KiCad, Altium Designer LTSpice
- 3D Design: Fusion 360, Shapr3D
- Robotics: PID Control, Motor Control, and Rotary Encoder

Documentation：

- Version Control: Git
- Professional writing: LaTeX