



YAO JIANG CHEAH

R&D Firmware Engineer

EDUCATION

Iowa State University
Bachelor of Science

Major: Electrical Engineering

Graduation Date:
Graduated on May 2019

GPA: 3.82/4.00

CONTACT

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Personal Sites:

<https://yaojiangc.github.io/>

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<https://www.linkedin.com/in/yicheah/>

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SKILLS

PROGRAMMING:

C, C++, Python, JavaScript, HTML5, CSS3, Verilog, VHDL, Assembly, VBA

EMBEDDED SYSTEM:

ARM, AVR, I2C, SPI, UART, FPGA, RTOS, Linux, USB Drivers, SOCs

IDE/SDK:

Keil, Vivado, IAR, Atmel Studio, ModelSim, Cadence, Quartus Prime, Eclipse, Visual Studio, QT Creator, AutoCAD, MATLAB

LANGUAGES:

Chinese, English, Malay

ADDITIONAL SKILLS:

First Aid Trainer, Advanced First Aid Certificate

PROFESSIONAL EXPERIENCE

Full-Time R&D Firmware Engineer

Broadcom Inc.

[Sep 2019–Present]

- Firmware debug & updates written in C
- Writing testing and production utilities in Python, C++
- Doing white box testing to ensure system reliability.
- Implement security piracy checking features in transceivers to ensure system reliability.

Firmware Engineer Intern

Automated

[March 2019–May 2019]

- Updating & Debugging firmware of a livestock delivery device that is running on a STM32 ARM processor with RTOS for multi-threading.
- Fully in-charge of developing new firmware version and submit firmware releases for testing.
- Analyzing PCB board design drawings for future firmware development in and outside of work.

Teaching Assistant for Digital Logic & Signal Processing II

Iowa State University

[August 2018–Dec 2018]

- In-charge of lab proctors, lab reports and exam paper gradings.
- Digital Logic Lab mainly includes using Quartus Prime software to do logic design using both schematic and Verilog coding method and then test it on Altera FPGA board.
- Signal Processing II Lab involves using MATLAB and Simulink to do signal analysis as well as filter designs. Lab also touches a little on PI controller.

TECHNICAL PROJECTS

Sentry Launcher in Embedded Linux

- Building a Sentry Launcher that shoots at a target with a certain color using the FPGA board with ARM Cortex-A9 processor, VITA camera and a Launcher.
- On hardware & programmable logic, VITA camera and launcher are connected with IP cores necessary to convert Bayer/grayscale image to color image.
- On the processing system, a Linux system is being built & flashed into the processor and with initializing support for the VITA camera.
- On the software side, a launcher driver was designed by modifying a Linux USB skeleton driver code. A few other software was written including target finder, launcher controlled using buttons, and the final piece of sentry launcher.
- Direct memory access and USB drivers were methods called by software.

PWM Signal Capture & Generate

- Designing both hardware & software platform using an FPGA with SOCs and on-board ARM Cortex-A9 processor.
- Designing state-machine to achieve signal capture & generate.
- Designing hardware IP module based on state-machine designed in VHDL.
- Writing software/firmware and drivers support in C for the hardware designed to analyze data captured and re-generate pattern.

Building 32-bit MIPS Microprocessor

- Building a MIPS microprocessor with RISC architecture using VHDL code that understands 6 different assembly instructions (ADD, ADDI, LW, SW, BEQ, J)
- Two different versions of MIPS Microprocessor were built, which are single clock single instruction and multiple clock single instructions (pipelined).
- Everything was written in VHDL code from scratch except with ALU, and memory units provided.