Computer Engineer Intern: Embedded Firmware

Location: Windsor, California

About Micro-Vu

Micro-Vu designs automated 3D measuring machines. These machines use 3D software, image processing, precision mechanics and motion control, lasers, tactile probes, and 3D sensors to measure mechanical dimensions on various parts to accuracies of a micron.

Micro-Vu manufactures these machines in a highly-automated factory at its campus in Northern California. Customers purchase Micro-Vu machines to measure their parts for quality control and assurance. Cell phone manufacturers, medical device and aerospace companies, and many smaller industries use Micro-Vu machines in their facilities around the world.

Micro-Vu has 115 employees and is located in Windsor, California near the Russian River. Micro-Vu was established in 1959, and has become a leader in automated 3D industrial measurement. Engineers must be highly-motivated and passionate about bringing the best possible products and technologies to the market.

Job Summary

The applicant will be responsible for embedded firmware design and implementation. Tasks may include but are not limited to:

- Design and implementation of bare metal and RTOS-based applications for boards based on ARM Cortex-M3, M4 and A8 processors and SOCs to control smart 3D measurement machines and sensors.
- Implementation of communication between MCUs and other onboard devices such as FPGAs, DRAM, SSDs, port expanders, and flash memory.
- Design and implementation of peripheral communication interfaces and protocols with sensors and accessories over SPI, I²C, CAN bus, Ethernet (TCP/IP, EtherCAT), 1-Wire, and others.
- Development of algorithms for robotics and automation, including trajectory generation, servo control, and LED lighting control.
- Implementation of Windows interfaces and drivers for communication with firmware.
- Consultation for hardware system architecture and design decisions.
- Implementation of industrial communication protocols such as Modbus and EtherCAT.
- Opportunity to implement software cores and to design and debug specialized FPGA cells (Xilinx).
- Opportunity to design electrical and electronic hardware, if interested.

Education

Sophomore standing or higher in Computer Engineering, Electrical Engineering, or equivalent.

Minimum Qualifications

- Experience and discipline in writing firmware with strong design aptitude
- Fluency in the C language, embedded design patterns, and common pitfalls
- Strong aptitude for computer science, software engineering, architecture, and algorithms
- Proficiency with software development techniques and version control
- Problem-solving ability, quick learning, and attention to detail
- Ability to work independently as well as collaboratively in a team environment

Preferred Qualifications

- Experience with ARM-based SoCs
- Comfort with designing and working in complex architectures where timing is critical
- Experience with communication protocol design and implementation
- Experience with RTOS or real-time Linux and general systems programming
- Experience with Windows development, USB, or TCP/IP
- Understanding of digital signal processing techniques and filters
- Experience with numerical algorithm implementation and analysis
- Experience with FPGA development or Electronic Design Tools (EDA)