Aditya Gaddam

Washington, DC
adityagaddam@gmail.com | lostinspacebar.com

WORK EXPERIENCE

Senior Development Engineer – Techno-Sciences Inc. 2009 – Present

Highly Accurate and Stable Reference Beacon
Designed and implemented a reference transmitter for system level calibration and testing of COSPAS-SARSAT installations.

- Took the project from design to deployment phase.
- Dual core DSP based electronics with firmware written in C/C++.
- Realtime software written to ensure timing constraints down to +- 50ns.
- Embedded Single Board Computer (SBC) running a stripped down Ubuntu distribution to orchestrate 4 transmission channels.
- Mechanical CAD for enclosure designed in Fusion 360 to minimize rack space while maintaining thermal requirements.
- Electronics design for PCBs including transmission channels and down-stream RF chain.
- Web-based user interface written in JS/Typescript with React.
- Device setup for remote maintenance including power supply control, loading new firmware and imaging via Clonezilla.

User Interface for beacon processing hardware
Developed a WPF based User Interface for beacon processing hardware used at COSPAS-SARSAT installations around the world.

- Rewrite of legacy application to enable multiple users and higher availability. Split desktop application into a REST service and client.
- Client written in C# using WPF following MVVM design patterns. Multiple custom controls including a fast FFT and waterfall plot.
- Service written in C# exposing a consistent, secure REST API.
- Data streamed from interop with processing software written in C/C++.

Search and Rescue coordination software
Java based software package for search and rescue coordination.

- Java based client on the Netbeans platform with JavaFX for UI components.
- Java EE service running on Glassfish with MSSQL for data storage.

Camera controller for coast line security systems
Software, written in C++, to integrate button and joystick hardware with an embedded SBC to control security camera systems over ethernet.

Powershell based server install automation
Wrote a set of powershell scripts to quickly configure racks of servers with initial sets of software, users and group policy.

DDS based 406MHz emergency submarine transponder (SEPIRB)
Designed hardware and firmware for a salt-water battery powered 406MHz emergency beacon launched via torpedo with a focus on power conditioning and efficiency to maximize battery life and minimize time to first transmission.

Electronics and instrumentation for mortar tube launched single rotor UAV
Designed electronics and software to collect and transmit sensor data and video from a single rotor UAV able to withstand high G forces during launch.

Low cost Hydrogen fuel Sulfur sensor
Miniaturized sulfur sensor for hydrogen fuel production using a bespoke low-cost spectral analysis setup.

Consulting Engineer – Innovital Systems 2014 – Present

Expendable Active Countermeasures for Helicopters
Designed miniature electronics to generate radar jamming sweeps for active missile countermeasures.

- Electronics designed to be packaged in existing flare cartridges to maximize compatibility with existing deployment systems.
- High frequency sweeps up to 18GHz generated on FR4 substrate.

Thermal imaging endoscope
Designed miniaturized electronics to integrate a FLIR imaging sensor into a custom endoscope.

- Electronics designed to minimize size of endoscope tip.
- Device shows up as a USB 2.0 camera.
- FLIR data streamed over USB to application.
- Basic image processing routines using OpenCV to highlight gallbladder stones.

EXTRA CURRICULAR

Developed a rugged balancing robot for use in undergraduate robotics course
Worked with a former professor to develop an Arduino based balancing robot for use in the classroom.

- Arduino based electronics are accessible and easy to expand on.
- Rugged robot designed out of easily replaceable panels and threaded rods.

Controls and wiring harness for Formula SAE team at University of Maryland
Developed a rudimentary traction control system and built the wiring harness for the Formula SAE car.

- First place winning car - suffered no electrical issues.
- LED based tachometer with shift light based on engine speed sensor.
- Traction control system via engine timing retardation based on data from individual wheel speed sensors.
- Custom wiring harness balanced repairability and reliability with overall weight.

Smart home controls for solar powered house entry from University of Maryland
Electronics and firmware development for a bespoke home automation system.

- Worked in a two man team to develop and implement a home automation system or a solar powered house showcased on the National Mall.
- Second place winner.
- Touch Screen UI to monitor status of the system.
- Physical wiring to connect the system, sensors and the DMX based lighting system in the house.

TECHNOLOGIES

C, C++, C#, JAVA, Python, JavaScript, Powershell, Node.js, SQL, Eagle, Fusion 360, Photoshop, DaVinci

EDUCATION

B.S. Computer Engineering. University of Maryland, College Park.