SIDDHARTH L HASANABADI

CONTACT

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PROFICIENCIES

Embedded Systems
ARM (STM32, cortex M4f)
Arduino, NodeMCU, Raspberry Pi
RTOS: Keil RTX5

Automotive software
Static analysis: MISRA, HIS, CERT
Aspice standards

Internet of Things
Time synchronous wireless Networks (ADI BMS)
Sockets: TCP, UDP, MQTT

Signal and Image processing
Spectral and Wavelet analysis
Python OpenCV

Tools & Programming Languages
Matlab
Multisim
Cadence Virtuoso
Synopsys Coverity
NodeRED Toolkit [IBM]
C, C++, Python

LANGUAGES

English, Hindi , Tamil, Kannada,
(some very basic French)

HOBBIES

Photography
Badminton
Upcycling old hardware

EDUCATION

VIT University, Vellore, Tamilnadu 2017-2021
B.Tech Electronics and Communication Engineering CGPA: 8.99/10

PROFESSIONAL EXPERIENCE

Embedded Software Developer, Analog Devices India [intern + full-time] Jan 2021- To date
Revolutionizing (modular & scalable) EV technology through Wireless Battery Management System (wBMS) across platforms. Worked on the development and debugging of a multi-hop, time-synchronized network stack, using ARM-based low-power SoC with integrated radio. Contributions productized in 2022 GMC EV Hummer.

Worked on:

- Co-developed an Environment aware channel selection method that dynamically adapts to multipath and external RF interference.
- Developed a Static analysis framework to cull new vulnerabilities at the Pull Request level.
- Ideated and implemented improved wireless Packet formats to support inter-version interoperability.
- Designed and implemented the integration of key wrapping to prevent plaintext storage of encryption keys.

INTERNSHIPS

Vision-based docking system for Spacecrafts [L&T Aerospace Design Centre]
Developed a prototype that uses only one 2d camera, to calculate the 3d position and orientation of the target satellite. Created a custom LED pattern, with a detection mechanic that can help to estimate the entire 6dof pose using Perspective-n-point with just one frame of image capture.
Demo: https://youtu.be/RGoBDAEkDBU

Predictive maintenance for CNC machines [L&T Precision Manufacturing Facility]
Developed a method to identify damage and time to failure of bearings in CNC spindle. Developed a POC to track bearing fault frequencies at constant rpm using spectral analysis from a surface-mounted accelerometer.

PROJECTS

Audio Steganography using FFT and Modulation (Signal processing: MATLAB)
Developed an application that uses convolution to encrypt speech and hides it by modulating it beyond human hearing range.

Time-optimized garbage disposal system (Statistics and IOT: Python, K means classification)
Developed a method that ensures optimized number and timing of garbage collection trips using temporal clustering and route optimization.

Motion-based game control (Image processing: Python OpenCV, Unity3d)
Developed a python application that tracks player horizontal movement through webcam and translates it to player movement in a mini tennis game. Video: https://www.youtube.com/watch?v=mQiQYkRC940&t=1s

2-axis Stabilization platform (Control systems: Python, Raspberry Pi)
Built a mechanism that holds a load stable in 2 axes regardless of any surrounding disturbances.
Utilizing gyroscope, Servos, and PID Controller.

EXTRACURRICULAR ACTIVITIES

Awards and certificates(Analog Devices):
Presented at Analog Devices India Technical Conference.
Received spot awards for enabling ASPICE compliance and automating continuous integration processes for automotive software, and critical assistance in POC development.
Analog Devices Young Professionals Network
Conducted mobile photography workshop.
Member of ADI Toastmasters Club. Represented ADI Banglore at the Area level.
Vellore Institute of Technology
Presented a talk on “Intelligence at the Edge” (Alumni guest lecture)
Organized and promoted several electronics/IOT workshops, as member of the IEEE VIT student chapter