

SINDHU NARAYANASWAMY

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SUMMARY

Software engineer with experience in developing real-time embedded software on ARM processors; Implemented Feedback Control Systems and Sensor Fusion Algorithms in C, C++, Python and MATLAB, Experience in Software – Hardware Integration; Optimized Deep Learning Models; Knowledge of Functional Safety Standards and Controls Software Tools.

PROFESSIONAL EXPERIENCE

Embedded Software Engineer Intern, Bosch, Ann Arbor, MI **May 2019 – Aug 2019**

- Developed body control software in Embedded C to realize automatic headlights and wiper control; Simulated the state flow diagram and control system using model-based tool ASCET to ensure algorithm robustness.
- Integrated AUTOSAR architecture and configured Basic Software for Infineon Aurix-TC277 ECU and improved development velocity by optimizing AUTOSAR workflow. Also programmed API to facilitate HW - SW interaction.
- Integrated and Tested ECU software using ISOLAR-EVE (virtual ECU) tool leveraging the AUTOSAR standard, thus enhancing software quality at an early point in the development process.

Software Engineer, Bosch, Bangalore, India

Sep 2016 – Jul 2018

- Developed Diagnostic Software for parameter monitoring from Application SW, and Basic SW (CAN, DCOM). Automated unit testing and component testing for C code using CANTATA. Achieved 10% improvement in SW quality. Used Vector tools (CANalyzer) to conduct release testing in HIL environment.
- Created State estimation (Kalman Filter), sensor fusion algorithms and control (state) flow for Electronic Stability Controller functionalities based on customer requirements, while ensuring compliance to ISO 26262 standards.
- Developed AUTOSAR embedded software for Electronic Stability Program ECU following V-model of ASPICE, from requirement analysis using Doors to unit test, validation and verification for high priority projects such as Ford V36x Transit, Ford F150, P552 to achieve ASPICE compliance.

Software Engineer Intern, Indian Space Research Organization, Bangalore, India

Jan 2016 – Apr 2016

- Designed a system-level Simulink model for 16-Point FFT to validate proposed DSP architecture. Verified 4096 Point FFT algorithm accuracy using MATLAB code, Programmed Radix-2² SDF(DSP) algorithm in VHDL and targeted into Xilinx Virtex-4 FPGA, which optimized HW utilization to 81% on FPGA, and improved OFDM system performance.
- Tested this DSP model on OFDM modulator/demodulator with real-time inputs, obtained a precision error of 0.2%. Implemented this architecture on OFDMA based WiMAX communication modules and improved their efficiency by utilizing an FPGA based FFT program.

Embedded Systems Intern, Technophilia Systems, Mumbai, India

Jul 2014 – Aug 2014

- Developed a real-time embedded software for a vehicle tracking system with GPS, accelerometer and GSM modules on ARM processor to improve accuracy of vehicle location by using sensor fusion algorithms.

Embedded Software Programmer, Tenet Technetronics, Bangalore, India

May 2014 – Jun 2014

- Developed a low-cost automated obstacle avoidance system based on C using Atmega328 microcontroller to prevent crashes of remote-control toy cars using ultrasonic sensor.

EDUCATION

Master of Science – Electrical Engineering

GPA: 3.80/4

May 2020

University of Texas at Dallas, Richardson, TX

Bachelor of Engineering – Electrical and Electronics

GPA: 3.85/4

May 2016

Visvesvaraya Technological University, KA, India

OTHER PROJECTS

Adaptive Cruise Control (ACC) and Lane Centering for robot vehicle

Jan 2020 – Present

- Developed Lateral and Longitudinal control of robot vehicle in C with PID controller and Ultrasonic Sensor on ATmega328 microcontroller. Calibrated the sensor and designed Kalman filter to determine the best State Estimation.

Self-Supervised Deep Learning-Based Speech Enhancement

Oct 2019 – Dec 2019

- Trained Convolutional Neural Network model using MATLAB and Python for Speech enhancement in environments with machinery & babble noise without any clean speech (Self-supervised model).
- Optimized to improve Output SNR by 37.5% reduced software latency to 56.4 micro-seconds.

Speaker Identification on Fearless Steps: Apollo 11 NASA Corpus

Nov 2019 – Dec 2019

- Developed a speaker recognition model based on traditional Gaussian Mixture Model and Deep Learning Model using Kaldi tool (C++, python and shell scripting) to identify speakers, and increased Top-5 Accuracy by 10%.
- Implemented pre-trained i-vector and x-vector model for each speaker using NASA Apollo 11 Corpus Dataset.

Pedestrian recognition using Deep Learning

Feb 2019 – Mar 2019

- Developed (Faster R-CNN) Deep-Learning based model using Keras framework for pedestrian recognition which was pre-trained on Nvidia GPU with KITTI vision Benchmark dataset to improve the software latency and accuracy.

TECHNICAL SKILLS

Programming/Engineering tools: Embedded C, Misra C, C++, Python, Matlab, Simulink, Multisim, LabView, Android Studio, ASCET, ISOLAR-AB (AUTOSAR)

Sensors: Ultrasonic, IR, Camera, IMU, wheel speed sensor, steering angle sensor, RADAR

Hardware: Arduino, Raspberry Pi, FPGA, MSP430, Arm Cortex-M4, Atmel 8051, ETAS LABCAR (HIL testing)