

## SINDHU NARAYANASWAMY

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### EDUCATION

#### **Master of Science in Electrical Engineering**

University of Texas at Dallas, Texas

Aug 2018 -- Exp May 2020

GPA: 3.79 / 4

**Specialization:** Signals and Systems

**Coursework:** Digital Signal Processing, Probabilities, Random Variables and Statistics, Linear systems, Machine learning for engineers and scientists, Pattern Recognition, Speech and Speaker Recognition, Optimal Estimation and Kalman Filter, Wireless Sensor Networks, Applied Digital Signal Processing

#### **Bachelor of Engineering in Electronics and Communication**

Visvesvaraya Technological University, Bangalore, India

Aug 2012 – June 2016

GPA: 3.80 / 4

### TECHNICAL SKILLS

- **Languages/Tools:** C, C++, MATLAB, Simulink, Python, Assembly, VHDL, Verilog, Android Studio, LabView
- **Hardware:** Arduino, Raspberry Pi, FPGA, MSP430, Arm Cortex-M4, Atmel 8051, ETAS LABCAR (HIL testing)
- **Sensors:** Ultrasonic, IR sensor, Camera, IMU, wheel speed sensor, steering angle sensor, RADAR
- **Digital Signal Processing skills:** Kalman Filter, Adaptive Filter, Wiener Filter, Parametric estimation (Autoregressive model)
- **Deep learning frameworks:** Keras, Tensorflow, Kaldi
- ASPICE process, ASIL, Agile, Misra, ISO standard (26262)

### PROFESSIONAL EXPERIENCE

#### **ETAS Inc., Michigan**

Embedded Software Engineer Intern

May 2019 – Aug 2019

#### **Python, Embedded C, ETAS ASCET-Developer, ISOLAR-AB, ISOLAR-EVE, AUTOSAR**

- Implemented Body Control Module (BCM), responsible for controlling vehicle Light and Wiper with AUTOSAR workflow on Infineon TC 29x Microcontroller and optimized the development of Embedded AUTOSAR software using in house tools.

#### **Robert Bosch Engineering and Business Solutions Limited (RBEI)**

Associate Software Engineer, Active Braking System

Sep 2016 – July 2018

#### **C++, ETAS ASCET-Developer, CANalyzer, ETAS LABCAR (HIL testing), ISO26262, MISRA-C, AUTOSAR, ASPICE**

- Responsible for Embedded software Development of Diagnostic Event Management (DSW/DEM), Sensor signal processing (SSP), Selective Drive mode in Active Braking system ECU for Ford Transit and F150 automobile.
- Worked on Active Safety Functions: ABS (Anti-Lock Braking System), ESP (Electronic Stability Control), TCS (Traction Control System), Value added functions (VAFS) such as ACC (adaptive Cruise Control), AEB (Automatic Emergency Braking).

### PROJECTS

#### **Adaptive Cruise Control (ACC) and Lane Centring for robot vehicle**

Jan 2020 – Present

Kalman Filter, State Estimation, PID controller, MATLAB, Arduino, Ultrasonic Sensor

- Implementing Level-2 (Lateral and Longitudinal control) autonomous robot using PID controller and ultrasonic Sensor.
- Calibrated the sensor using curve fitting and implemented Kalman filter to estimate distance values from ultrasonic sensor.

#### **Self-Supervised Deep Learning-Based Speech Enhancement**

Oct 2019 – Dec 2019

Convolution Neural Network (CNN), Audio Processing, Python, MATLAB

- Built a model using CNN for Speech enhancement in machinery or babble noisy environment that was trained without any clean speech. Improved the Output SNR by 37.5% with software latency of 56.4 micro-seconds.

#### **Speaker Identification on Fearless Steps: Apollo-11 NASA Corpus**

Nov 2019 – Dec 2019

Speaker Recognition, GMM, UBM, i-vector, x-vector, Cosine distance measure, Kaldi

- Built a speaker recognition model to identify speakers using traditional GMM approaches extracting i-vectors and x-vectors.

#### **Pedestrian recognition using Deep Learning**

Feb 2019 – Mar 2019

Faster R-CNN, Object detection, Python, Keras

- Built Deep-Learning based model for pedestrian recognition which was pre-trained with KITTI vision Benchmark dataset.

#### **Optimal FIR Wiener Filter Design for Estimation of Desired Signal using recorded noisy audio signal**

April 2019-May 2019

Audio Processing, Wiener Filter, Convex Optimization, MATLAB

- Designed optimal FIR Wiener filter to estimate the magnitude, frequency of desired signal for the given noisy audio signal.

#### **Predict if song will be in Billboard top 100 hit using music information**

March 2019

Machine Learning models: K-Nearest Neighbours, Support Vector Machine (SVM), Logistic Regression, Python

- Optimized a machine learning model that uses the musical features of a song to predicts if it will be a hit song.

#### **Design and implementation of 4096-point FFT for communication system**

Jan 2016 – Apr 2016

Research Work in Indian Space Research Organization (ISRO) (Advisor- Satish Sharma, Scientist)

- Designed a system level simulation model in Simulink for 16-Point FFT.
- Optimized hardware utilization to 81% for 4096 points FFT implementation using Radix-2<sup>2</sup> SDF algorithm FPGA.