SINDHU NARAYANASWAMY

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EDUCATION

Masters of Science in Electrical Engineering   Aug 2018 -- Exp May 2020
University of Texas at Dallas, Texas   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

Bachelors of Engineering in Electronics and Communication   Aug 2012 – June 2016
Visvesvaraya Technological University, Bangalore, India   GPA: 3.80 / 4
Coursework: DSP, Image Processing, Embedded Systems, Microcontroller, Microprocessor, Control Systems

PROFESSIONAL EXPERIENCE

Robert Bosch Engineering and Business Solutions Limited (RBEI)
Associate Software Engineer   Sep 2016 – July 2018
- 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 AUTOSAR application layer and Base Software (Service layer).

ETAS Inc.
Embedded Software Engineer Intern   May 2019 – Aug 2019
- Implemented Body Control Module (BCM) responsible for controlling vehicle Light and Wiper with AUTOSAR workflow on Infineon TC 29x Microcontroller.
- Optimized the development of Embedded AUTOSAR software using in house tools such as ASCET for model based development, ISOLAR-AB for AUTOSAR architecture, ISOLAR-EVE (Virtual ECU) for validation and verification.

PROJECTS

Pedestrian recognition using Deep Learning   Dec 2019 – Present
- Designing Faster RCNN for Pedestrian detection based on the KITTI vision Benchmark dataset.

Adaptive Cruise Control (ACC) and Lane Centring for robot vehicle   Jan 2020 – Present
- Implementing ACC and Lane centring algorithm 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
- Built a Convolution Neural Network for Speech Enhancement for machinery and babble noise separately. This system uses 2 Noisy speech signals coming from mid stereo mic as the input to enhance the speech.
- Improved the Output SNR by 37.5% with software latency of 56.4 micro-seconds and conducted subjective test to verify.

Optimal FIR Wiener Filter Design for Estimation of Desired Signal using recorded noisy audio signal   April 2019-May 2019
- Implemented Optimum FIR Wiener Filter in MATLAB to minimize MMSE for the given noisy audio signal.
- Optimized FIR filter with order 7000 to have MMSE of 0.19. Estimated the magnitude, Frequency of desired signal using this optimum FIR wiener filter.

Predict if song will be in Billboard top 100 hit using music information   March 2019
- Implemented different machine learning models such as k-Nearest Neighbors, Support Vector Machine, Logistic Regression models in python on the musical features data set and selected best parameter for each model using cross-validation.
- Maximum Test accuracy of 79.22% was obtained using Logistic Regression model.

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. MATLAB program was developed to verify 4096 Point FFT algorithm accuracy. Radix-2^2 SDF algorithm was programmed in VHDL and targeted into Xilinx Virtex4 FPGAs. FFT was implemented in OFDM system for real time inputs and precision of results was 99.8% of Matlab outputs.
- Optimized hardware utilization to 81% for 4096 points FFT implementation on FPGA.

TECHNICAL SKILLS

- **Programming languages:** C, C++, MATLAB, Python, Embedded C, Assembly, VHDL, and VERILOG
- **Softwares Tools:** MATLAB, Simulink (MATLAB), LabVIEW, Keil uvision, Xilinx ISE, Turbo C, Arduino IDE, IBM Rational Doors, TCM, Sharc CC, ETAS ASCET, HP ALM (Quality Center), SVN, Diamant Pro, TK winx, MM6, Questa sim, ISOLAR-A/B
- **Hardware:** Arduino-UNO, MSP430, Arm Cortex-M4, Atmel 8051, FPGA, LABCAR
- **Operating systems:** Windows, Linux
- ASPICE process, ASIL, Agile, Misra, ISO standard (26262)
- **Knowledge 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)
- **Automotive Sensors:** IMU sensor, wheel speed sensor, Steering angle sensor, RADAR, ultrasonic, IR sensor
- **Deep learning frameworks:** Tensorflow, Keras, Kaldi

CERTIFICATIONS AND ACHIEVEMENTS

- **Control of Mobile Robots** offered by *Georgia Institute of Technology* through Coursera (100%)
- **Embedded Systems with ARM – Cortex** delivered & taught by *Technophilia Systems Private Limited*, developed and certified by *Robotics & Computer Applications Institute of USA*
- Achieved **Budding Star** of the Active Safety Department award in the year 2017 at **RBEI**
- Winner of district level science exhibition and third winner of state level science exhibition for representing the topic '**MATHEMATICS IN DAILY LIFE**' in the year 2009