GAURAV DUGGAL

Communications and Signal Processing engineer

@ gauravduggal1729@gmail.com +919505504009 Hyderabad, India

RESEARCH EXPERIENCE

Graduate Intern

Hertzwell

Dec 2018 – Feb 2019 Singapore

- Responsible for the simulation of the complete FMCW **MIMO** Automotive radar scenario including waveform design, ground clutter modelling, automotive target modelling, receiver modelling and signal processing for point cloud generation.

Master's Thesis

Guide: Dr. Shobha Sunder Ram

May 2018 – June 2019 Delhi, India

- Designed a hyper resolution automotive joint radar communication system by integrating the radar in V2X 802.11.ad framework.
- Modelled automotive targets as extended target model and generated relevant radar signatures.

Visiting Research Intern

Cranfield University

May 2012 – July 2012 Shrivenham, United Kingdom

- Designed an Inertial Navigation System for an unmanned Ground Vehicle
- The Inertial Navigation system data was fused with GPS data using a Kalman Filter.

INDUSTRIAL EXPERIENCE

RF Software Engineer

Qualcomm

July 2019 – Present Hyderabad, India

- Working as an embedded software developer in the RF Software 5G team

Member of Technical Staff

Tonbo Imaging

May 2015 – June 2016 Bangalore, India

- Working as an embedded software engineer to develop thermal imaging camera system for defence related purposes.

Embedded Engineer

Ducere Technologies

July 2013 – April 2015 Hyderabad, India

- Made working prototypes of Wearable technology based design ideas using basic physics and electronics.

TECHNICAL COURSEWORK AND SKILLS

- Statistical Signal Processing, Radar Systems, Probability and Random Processes, Principles of Digital Communication systems, Reinforcement Learning, Principles of Global Positioning Systems, MU-MIMO, Massive MIMO and OFDM Technologies for 5G Networks.
- C, OOP programming in Python, Java, MATLAB.

EDUCATION

Mtech. (Communications & Signal Processing)

Indraprastha Institute of Information Technology

2017-2019 Delhi

- CGPA: 9.04/10

B.E. hons. (Electrical and Electronics)

Birla Institute of Technology and Science, Hyderabad Campus

2009-2013 Hyderabad

- CGPA: 7.07/10

PROJECTS

ADSB receiver & Antenna design, Dr. S.S. Ram, Assoc Prof, IIITD

- Constructed a portable ADSB receiver using a Sofware Defined Radio and an embedded computer.
- Implemented a Matched Filter in the preamble detection stage of the ADSB receiver code and corrected for 1 bit errors
- Designed a phased array antenna for the system to improve aircraft tracking up to horizon (400km).

Wide Band Spectrum Monitoring using a Narrowband receiver, Dr. V. Bohara, Assoc Prof, IIITD

- Estimating the channel occupancy probability distribution by scanning a wideband channel using a narrowband software defined radio.

Reinforcement Learning Agent for Atari game Catch, Dr. S Kaul, IIITD

- Implemented Policy Gradient based methods (2018 research papers) and compared it with Deep-Q learning to learn the optimal policy for Atari game Catch.

PUBLICATIONS

- G. Duggal, S. S. Ram, and K. V. Mishra, "Micro-Doppler and micro-range detection via Doppler-resilient 802.11ad-based vehicle-to-pedestrian radar," in IEEE Radar Conference, 2019,
- G. Duggal, Vishwakarma S., Mishra, K. V., Ram S. S. (2019). Doppler-Resilient 802.11 ad-Based Ultra-Short Range Automotive Radar. (Submitted to Transactions on Aerospace and Electronic Systems)
- N. Pandey, G. Duggal, S.S Ram, Database Of Simulated Inverse Synthetic Aperture Radar Images For Short Range Automotive Radar (Submitted to IEEE Radar Conference 2020)