PRAVEEN KUMAR N

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Education

Indian Institute of Technology Dharwad (CGPA : 9.17)	**Sep 2020 – Present**
MS (Research) in Wireless Communication : Guide - Dr.Naveen M.B	*Dharwad, Karnataka*
PESIT Bangalore South Campus (CGPA : 8.06)	**Aug 2015 – June 2019**
Bachelor of Engineering in Electronics and Communication	*Bengaluru,Karnataka*

Research Interests

- Wireless communication
- Deep learning
- Narrow-band IoT
- Physical layer communication
- Reinforcement learning
- Online machine learning

Relevant Coursework

- Linear algebra
- Probability and random processes
- Convex optimization
- Advanced digital communication
- Signals and systems
- Wireless communication
- Artificial neural networks
- Statistical pattern recognition
- Reinforcement learning

Experience

Modem Systems Engineer — **Oct 2022 – Present**
Qualcomm — *Hyderabad, Telangana*

- Currently working on bring up/commercialization of the new modem
- Good exposure on physical layer algorithms/techniques, 3GPP specifications

Research Intern — **Apr 2022 – Sep 2022**
TCS Research & Innovation Labs — *Bengaluru, Karnataka*

- Deep learning based solutions for hybrid beamforming in massive MIMO millimeter wave communication system was explored during my tenure

Postgraduate Project Assistant — **Oct 2020 – Sep 2022**
Indian Institute of Technology Dharwad — *Dharwad, Karnataka*

- I was part of a IMPRINT project named *"A unified broadband and IoT base station with energy efficient resource allocation and caching capabilities"*
- During my tenure, I was responsible for the fixed C implementation of the algorithms to detect random access preamble and estimate timing and frequency offset in narrow band IoT (NB-IoT) system
- Also, worked on evaluation NB-IoT system in non terrestrial networks (NTN)

Project Intern — **Jan 2019 – Mar 2019**
Defence Research and Development Organisation (DRDO) — *Bengaluru, Karnataka*

- Worked on developing angle of arrival (AoA) estimation algorithm for electronic warfare system
- The proposed algorithm was implemented and its performance was analyzed in MATLAB

Projects

Multi User Detection using Deep Neural Network for Grant Free NOMA System
Tools: Google colab, Python, Tensorflow, Matlab — **Aug 2021 – Jan 2022**

- The multi user detection was modeled as multi label classification problem and a deep neural network model was developed which is compatible with NB-IoT
- The proposed model was trained and tested on a large data set generated from MATLAB for different signal to noise ratios (SNRs) and channel impairments

Angle of Arrival Detection Algorithm for Electronic Warfare (Internship Project)
Tools: Matlab, Latex — **Jan 2019 – Mar 2019**

- Developed an algorithm to find the angle of arrival of enemy radar signal in electronic warfare scenario
- Algorithm was developed in MATLAB and its performance was analyzed using different performance metrics

Resource Allocation Algorithm for Device to Device Communication (Btech final Year Project)
Tools: Matlab, Latex — **Aug 2018 – Apr 201**

- Worked on implementing a resource allocation algorithm for device to device communication in 4G networks
- Algorithm was implemented in MATLAB. The performance of the algorithm was analyzed by simulating various wireless scenarios in MATLAB

Publication(s)

- **Praveen Kumar N** and Naveen M.B, DNN-based active user detection for an NB-IoT compatible grant free NOMA system, In 2022 IEEE 95th Vehicular Technology Conference (VTC 2022 - Spring).

- **Praveen Kumar N** and Naveen M.B, Performance Analysis of a UAV-based Non-Terrestrial Network (NTN) using NB-IoT, In 2023 IEEE Wireless Communications and Networking Conference (WCNC).

Technical Skills

Languages: Python, C/C++ (2+ years of experience)
Developer Tools/Software: Apex, QXDM, Matlab, Git, VS Code, Google Colab
Frameworks/Libraries: Tensorflow (2 years of experience)

Online Certifications

- Deep Learning Specialization (3/5 courses) 1, 2, 3.

- Python 3 Specialization (4/5 courses) 1, 2, 3, 4

Workshops/Hackathons

- Attended one day hands on workshop on "Deep Learning using Tensorflow" held at indian institute of science (Aug 2019)

- Attended three day hands on workshop on "Network Programming & Network Emulation" based on python programming conducted by pesit south campus (July 2018)

- Participated as a team of 4 in KLUDGE, A 24hr annual technical hackathon of pesit south campus. We built a smart bike system and was one among top 17 out of 100 teams participated (Mar 2018)