

JAYANTH S

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I have recently completed **MS(Research)** from the Department of Electrical Engineering at the **Indian Institute of Technology Dharwad (IIT Dharwad)**, India, with the research focused on the **Optimization of Age of Information in Wireless Communication Networks** with **Asst. Prof. Rajshekhar V Bhat**.

My current research interests are **Wireless Communication, Stochastic Optimization, Markov Decision Process (MDP), Deep Learning, Multi-armed Bandits, and Reinforcement Learning**.

EDUCATION

Indian Institute of Technology, Dharwad 2020 – 2022

M.S(Research) in Electrical Engineering, CGPA = 9.17/10

Dharwad, Karnataka

Thesis supervisor : Rajshekhar V Bhat

PES Institute of Technology, Bangalore South Campus

2015 – 2019

B.E. in Electronics and Communication Engineering, CGPA = 8.16/10

Bangalore, Karnataka

COURSEWORK

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- | | |
|--|-----------------------------------|
| • Probability and Stochastic Processes | • Statistical Pattern Recognition |
| • Linear Algebra | • Reinforcement Learning |
| • Convex Optimization | • Wireless Communication |

EXPERIENCE

Linköping University

October 2022 - December 2022

Research Assistant, Department of Computer and Information Science

Linköping, Sweden

- I explored using **Open-loop Stationary Randomized Policy** framework to solve the designed optimization problem involving **semantics and age of information** with Associate Professor **Nikolaos Pappas** at Linköping University. [[Website](#)].

TCS Research and Innovation Labs

May 2022 - August 2022

Research Intern

Bangalore, Karnataka

- I explored using **DDPG, TD3 and SAC** Deep Reinforcement Learning algorithms for Hybrid Beamforming in Single User - MIMO communication systems.

Indian Institute of Technology Dharwad

January 2021 – July 2022

Teaching Assistant

Dharwad, Karnataka

- Have been a teaching assistant for Mathematics for Data Science, Probability Models and Applications, and Optimization Theory and Algorithms courses.

Evobi Automations Pvt Ltd (Bibox)

January 2019 – February 2019

Embedded Stack Developer Intern

Bangalore, Karnataka

- Developed library files for interfacing different sensors with Bibox Hornbill board which had Nordic semiconductor's nRF51822 as micro-controller.

PROJECTS AND PAPER IMPLEMENTATIONS

Policy Gradient Algorithms for Atari Games [[code](#)]

2022

- I, along with the other 3, applied the policy gradient algorithms, i.e., **A2C, A3C, TRPO, and PPO**, based on the *stablebaselines3* and *ray rllib* implementation of these algorithms for Pong, Breakout and Space-Invaders atari games.

Implementation of the Paper - Model Free Training for End-to-End Communication Systems [[code](#)]

2022

- Implemented the model-based and model-free **auto-encoder** based end-to-end communication system for AWGN and Rayleigh Block Fading (RBF) channels as given in the paper: Fayçal Ait Aoudia and Jakob Hoydis, "Model-Free Training of End-to-End Communication Systems" .

Resource Allocation For Overlay Device To Device (D2D) Communication

2019

- In this work, we implemented an algorithm called Largest Interference Aggregated First (LIFA) to utilize the resources available for device-to-device communication effectively.

TECHNICAL SKILLS

Languages: Python, C/C++

Software Tools: Matlab, Latex

Packages/Frameworks used : Pytorch, Tensorflow, Keras, NumPy, Scikit-learn, Ray rllib

PUBLICATIONS

1. **Jayanth S** and Rajshekhar V Bhat (IIT Dharwad), “Age of Processed Information (AoPI) minimization with power constraint in fading multiple access channels”, **IEEE ICC 2022** and the extended version of the paper has got accepted in **IEEE Transactions on Wireless Communications (IEEE-TWC)** journal.
 - We formulated a long-term average AoPI minimization problem across the users subject to average power constraints. We solved the problem using **Constrained Markov Decision Process (CMDP)** and we also obtained low-complexity solution using **Drift-plus-penalty (DPP)** method based on Lyapunov optimization.
2. Gagan G B, **Jayanth S** and Rajshekhar V Bhat (IIT Dharwad), “Age of Information Minimization with Power and Distortion Constraints in Multiple Access Channels,” **WiOpt, 2021**.
 - We formulated a long-term average age of information (AoI) minimization problem across the users subject to average power and distortion constraints. We solved the problem using Constrained Markov Decision Process (CMDP) and also proposed a low-complexity solution using **Stationary Randomized Policy (SRP)**.

CERTIFIED COURSES

- Deep Learning Specialization- Coursera
- Reinforcement Learning Specialization - Coursera