Jayanth S

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I am a 2nd year MS (Research) student in the Department of Electrical Engineering at the Indian Institute of Technology, Dharwad (IIT Dharwad), India. I am currently working on **Optimization of Age of Information in Wireless Communication Networks** with **Asst. Prof. Rajshekhar V Bhat**.

My current research interests are **Stochastic Optimization, Wireless Communication, 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

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

Experience

TCS Research and Innovation Labs   **April 2022 −**
Research Intern   *Bangalore, Karnataka*

- Currently working on using Deep Learning/Reinforcement Learning based techniques for Hybrid Beamforming in MIMO systems.

Teaching Assistant   **January 2021 −**

- 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 | *Python* | Code   **Apr 2022**

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

Model Free Training for End-to-End Communication Systems | *Python* | Code   **Jan 2022**

- In this work, I implemented 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 | *Matlab*   **2019**

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

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", presented at IEEE ICC 2022.

   - 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 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", IEEE 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.

Certified Courses

- Deep Learning Specialization- Coursera

- Reinforcement Learning Specialization - Coursera