Jayprakash S. Nair (JP)

M.Tech. in Artificial Intelligence & Data Science
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Summary

Researcher in Multi-Agent Multi-Robot Systems and UAVs. My current research focuses on **Autonomous Systems**, **Federated Learning**, **Swarm Learning**, **Evolutionary Algorithms**, and **Genetic Programming**. I have to my credit, three papers (two of them as the first author) on decentralized learning strategies in **Multi-Robot** environments using **mobile agents**. I aim to contribute to innovative **Lifelong Bio-Inspired Learning** solutions in the realm of robotics.

Education (in english medium throughout)

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
M.Tech. (AI & DS)	Indian Institute of Technology (IIT) Patna	9.09 (Current)	2024-June 2026
B.Tech. (CSE)	APJ Abdul Kalam Technological University, Kerala, India	7.05	2018-2022
Senior Secondary	Central Board of Secondary Education (CBSE), India (Physics, Comp.Sc., Maths., Chem. & English)	76.2%	2018

Research Interests

- Multi-Agent Systems, Multi-Robot Learning, Federated Learning, Swarm Intelligence, Autonomous UAVs, Evolutionary Computation, Bio-inspired AI, Lifelong Learning

Publications

** denotes equal contribution*

C1. Jayprakash S. Nair, Jimson Mathew, and S. B. Nair, "A Reinforcement Learning-Inspired Latent Yield-based Adaptive Algorithm Switching Mechanism", *EvoStar 2026 (CORE Ranked Conference)*, Toulouse, France, 8-12th April 2026. **(Accepted)**.

C2. Jayprakash S. Nair, Divya D. Kulkarni, Ajitem Joshi, and Sruthy Suresh, "On Decentralizing Federated Reinforcement Learning in Multi-Robot Scenarios", *7th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference (SEEDA-CECNSM)*, 2022. **Citations: 18**.
DOI: 10.1109/SEEDA-CECNSM57760.2022.9932985.

C3. Gayathri Rangu*, Divya D. Kulkarni*, **Jayprakash S. Nair***, and S. B. Nair, '"A Hybrid Federated Reinforcement Learning Approach for Networked Robots", *Recent Advances in Electrical and Electronic Engineering*, Springer, 2023. **Citations: 3**.
DOI: 10.1007/1978-981-99-4713-3_47.

Professional and Research Experience

- **Research Intern** *Sep. 2025 - Present*
  Indian Institute of Technology (IIT) Ropar Ropar, India
  – Developing visual navigation for drones

- **Software Engineer** *July 2022 - Aug. 2024*
  People10 Technologies Inc. Bengaluru, India
  – Developed e-commerce features for Allegiant Air (GraphQL, pricing, bundles, bookings)
  – Contributed to UI enhancement, GraphQL mutation development, shopping cart pricing updates, and QA process automation for the Allegiant Air project under the Navitaire Initiative
  – **Tools & technologies used**: PHP, Symfony, GraphQL and JavaScript

- **Research Intern** *Feb. 2019 - Dec. 2019*
  Indian Institute of Technology (IIT) Guwahati Guwahati, India
  – Learnt to control robots within Webots using Python
  – Program mobile agents using *Tartarus*, a multi-mobile agent platform

Projects

- **Visual Navigation for drones** *Sep. 2025 - In Progress*
  Indian Institute of Technology Ropar
  - Worked on developing a Visual Navigation System for a drone to enable autonomous operation in GPS-denied environments
  - Utilized preloaded satellite imagery along with real-time visual data from the drone
  - Performed image comparison between satellite and drone imagery to guide navigation
  - **Tools & technologies used**: OpenCV, ViT models, and SIFT models

- **Population Based Training for a Multi-Robotic scenario** *Jul. 2025 - In Progress*
  Indian Institute of Technology Patna
  - Proposes a latent yield–based method for stable and adaptive online algorithm selection
  - Uses island models to enable parallel exploration and performance exchange among algorithms
  - Demonstrates the approach's effectiveness on sorting and robotic obstacle-avoidance tasks, showing improved adaptability and stability
  - **Tools & technologies used**: Python and Webots

- **On Decentralizing Federated Reinforcement Learning in Multi-Robot Scenarios** *Dec. 2021 - Jan. 2022*
  Bachelor's Project
  - Implemented Decentralized Federated RL (Q- & SARSA) for robots running on multiple instantiations of Webots running on different PCs connected via the LAN, using mobile agents
  - **Tools & technologies used**: *Tartarus*, Python and Webots

- **RL for e-puck within Webots** *Feb. 2019 - Dec. 2019*
  IIT Guwahati Github
  - Developed and evaluated RL (Q- and SARSA) robot controllers in Webots
  - **Tools & technologies used**: Python and Webots

Key Courses Taken

- Data Structures, Algorithms, DBMS, Machine Learning, Artificial Intelligence, Web Services, Operating Systems, Deep Learning, Internet of Things, Natural Language Processing, Drone Building Course (Audit), Reinforcement Learning, Generative AI

Technical Skills

- **Programming:** C/C++, Python, R, JavaScript, SQL
- **Tools & OS:** Git, Jupyter Notebook, Google Colab, Webots, LaTex, Linux, Windows
- **Libraries/Frameworks:** Pandas, Numpy, scikit-learn, PyTorch, Symfony, OpenCV, ViT Models
- **Web Skills:** HTML/CSS/JS, ReactJS, PHP, GraphQL

Languages known

- English, Hindi, Malayalam