Dyuman Aditya

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Education

Ecole Centrale de Nantes — Nantes, France
MSc in Advanced Robotics — *September 2025*

- **M1** (**GPA** 3.78/4.0): Artificial Intelligence, Control, Optimization, Computer Vision, Mobile Robots, Signal Processing, Modelling & Design of Manipulators

Sri Aurobindo International Centre of Education — Pondicherry, India
BSc in Computer Science, Best Student Award — *October 2022*

- Computer Science, Mathematics, Mathematical Statistics, Physics, Numerical Analysis, English Literature, Tamil

Publications

- Mukherji, K., Parkar, D., Pokala, L., **Aditya, Dyuman**, Shakarian, P. "**Scalable Semantic Non-Markovian Simulation Proxy for Reinforcement Learning**". In IEEE ICSC. *(link)*
- Bavikadi, D., **Aditya, Dyuman**, Parkar, D., Bavikadi, D., Shakarian, P., Mueller, G., Parvis, C., Simari, G. "**Geospatial Trajectory Generation via Efficient Abduction: Deployment for Independent Testing**". In ICLP. *(link)*
- **Aditya, Dyuman**, Mukherji, K., Balasubramanian, S., Chaudhary, A., Shakarian, P. (2023). "**PyReason: Software for Open World Temporal Logic**". In AAAI Spring Symposium. *(link)*

Manuscripts in Preperation

- Mukherji, K., **Aditya, Dyuman**, Patil, J., Bavikadi, D., Shakarian, P. "**Lower Lattice Annotated Logic for Open World Temporal Reasoning**". Will submit to IJCAI 2025

Experience

Researcher at Technical University of Darmstadt — July. 2024 - Present
Prof. Jan Peter's lab — *Darmstadt, Germany*

- Developed a navigation software stack for the MAB quadruped startup
- Integrating legged kinematics into Visual Odometry for robust localization. Targeting IROS 2025

Research Assistant at Arizona State University — Mar. 2022 - Present
Prof. Paulo Shakarian's lab — *Tempe, Arizona USA*

- Developed an implementation for PyReason - an explainable inference software supporting annotated, real-valued, graph-based, and temporal logic
- First Authored a manuscript presenting PyReason and experimental results published at AAAI-MAKE 2023
- Currently working on multiple research projects in the field of logic and reinforcement learning

Research Assistant at University of Maryland — June. 2023 - Present
ARLIS — *College Park, Maryland USA*

- Developed a method to evaluate operational workflows due to added AI technology using PyReason as a simulator of the workflow

Research Intern at Carnegie Mellon University — Jun. 2022 - Nov. 2022
Prof. Min Xu's lab — *Pittsburgh, Pennsylvania USA*

- Evaluated performance for algorithms that find the position and orientation of particles on biomedical images
- Started making improvements to the computer vision algorithms

Robotics & Machine Learning Research Intern — Jul. 2020 - Aug. 2022
Telekinesis AI — *Darmstadt, Germany*

Research

- Built a PyTorch Reinforcement Learning toolbox with 4 state-of-the-art algorithms from scratch and conducted experiments on OpenAI Gym
- Built custom reinforcement learning environments in Pybullet - Drilling and Bin-picking. Conducted experiments on these using the reinforcement learning toolkit
- Developed a real-time, single object 6D object pose estimation pipeline and conducted experiments on the YCB dataset

Industrial

- Developed a package to enable real-time motion control from external PCs
- Assisted in porting a large-scale legacy robotic application from Python to C++
- Designed and manufactured a hand-mounted device to track the orientation of the operator's hand
- Developed a networking package for TCP/IP and UDP communications between software components and industrial robots
- Developed a 3D Unity environment to display robots and integrated it into the main Telekinesis software

Patents and Patent Applications

Controlling Industrial Machines by Tracking Movements of their Operators ***(link)***Patent Pending
Inventors: *Pal, S., Chakraborty, K.,* ***Aditya, Dyuman****, Datta, A., Peters, J.*

Online Certificates

Deep Learning Specialization - with Andrew Ng Jun. 2020 - Oct. 2020
Coursera (verification link)

Honours & Awards

Sri Aurobindo International Centre of Education

- Graduated with the **The best student award**: 2022. Awarded to the best student in the graduating class
- 9 Time Recipient of the **Prize for Academic Excellence** : 2011, 2014, 2015, 2016, 2017, 2019, 2020, 2021, 2022

Projects

Animatronic Hand Jan. 2019 - Oct. 2019

Designed and 3D printed an Animatronic hand that imitates an operator wearing a glove. Built a novel flex sensor using cheap potentiometers to measure finger movement. Presented in the annual school Science Fair

Low-Cost 3D Printer *(link)* Jan. 2018 - Dec. 2018

Designed, prototyped and built a high-resolution, low-cost 3D printer from scratch, with a novel screw based motion system. The project has received over 110K views on instructables.com (Won 2nd prize). Presented in the annual school Science Fair

Extra-Curricular Activities

Teaching & Mentoring
Sri Aurobindo International Centre of Education

- Mentored freshmen in Mathematics (2022)
- Gave talks to high school students about my research and AI in general (2021-2022)
- Helped organize the annual science fair and mentored junior students (2019)
- Formed the "Science Group": a group of students interested in science and discussed breakthroughs and research papers in physics, chemistry, math and technology (2018)

Skills

Languages: English, French, Sanskrit, Tamil
Programming Languages: Python, C, C++, Matlab, Bash
Computer & Software Skills: Autodesk Fusion 360, Git, Linux, OpenAI Gym, LaTeX
Libraries & Frameworks: PyTorch, Keras, OpenCV, ROS, Numpy, Eigen, Matplotlib, Pandas, Pybullet, PCL, Numba
Soft Skills: Logical Reasoning, Written Communication, Verbal Communication, Time Management, Discipline, Eye for Detail, Self-motivation, Teamwork