Dyuman Aditya

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Education

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

Core Modules:

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

Sri Aurobindo International Centre of Education — Pondicherry, India
Higher Secondary — *Oct. 2019*

Core Modules:

- Computer Basics, Mathematics, Physics, Chemistry, English, French, Tamil, Sanskrit, Violin, Woodworking

Publications

- Mukherji, K., Parkar, D., Pokala, L., **Aditya, Dyuman**, Shakarian, P. "Scalable Semantic Non-Markovian Simulation Proxy for Reinforcement Learning". Manuscript in preparation
- **Aditya, Dyuman**, Mukherji, K., Balasubramanian, S., Chaudhary, A., Shakarian, P. (2023). "PyReason: Software for Open World Temporal Logic". In AAAI Spring Symposium. *(link)*
- **Aditya, Dyuman** (2019). "Sanskrit and Computers - A Future Together?". Mother India, 63-79. *(link)*

Experience

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
- Accelerated PyReason using the python numba library, making it scalable
- Ran experiments on PyReason with large network graphs
- First Authored a manuscript presenting PyReason and experimental results published at AAAI-MAKE 2023

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.*
Application number: EP21192932.8

Application date: 24 August 2021

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

File Manager *(link)* Jan. 2021 - Apr. 2021

Developed a file manager with advanced functions that runs in a Linux terminal

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)

Physical Education

Gymnastics, Athletics, Aquatic Sports, Games (Football, Basketball, Volleyball, Hockey)
Combative Sports and Running (2 time winner of the Annual Road Race).

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