RESUME

Website Email Github LinkedIn Google Scholar

EDUCATION, RELEVANT COURSE WORK & TECHNICAL SKILLS

Birla Institute of Technology and Science Pilani, Goa, India   *August 2017 - December 2020*
Bachelor in Engineering (B.E.) Hons.
Department of Computer Science and Information Systems.   **CGPA: 8.43 / 10.0**

Course Work: Neural Networks & Fuzzy Logic, Reinforcement Learning, Computational Neuroscience, Social Psychology, Prob Stats, Database Management Systems, OOP, DSA, Information Retrieval

Programming Languages: Python, C++, C
Tools: Docker, LaTeX, Git, PyBullet, Gazebo, Coppeliasim, Webots
Coding Exp: I have experience in building ML pipelines for DL and DRL applications in Pytorch.

RESEARCH EXPERIENCE

Biorobotics Lab at Carnegie Mellon University   **May 2020 - May 2022**
Supervisors: **Prof. Choset**, **Benjamin Freed**
- Credit Assignment in Multi-Agent Reinforcement Learning for on-policy Actor Critic methods
- Sample efficient and robust Model-based Reinforcement Learning in Multi-Agent systems.

Aston University, Birmingham, UK ‖*Robocomp*   **April 2020 - September 2021**
Supervisors: **Dr. Manso**, **Dr. Bachiller**
- Developing novel Deep Reinforcement Learning enabled Social Navigation Algorithms.

INDUSTRY EXPERIENCE

Tata Consultancy Services, R&I - Predoctoral Research Fellow   **October 2021 - Present**
- Perception-aware integrated Task and Motion Planning using Neurosymbolic AI for retail shelf and inventory management by detecting and correcting anomalies •*Supervisors*: **Dr. Gubbi**, **Dr. Balamuralidhar**, **Dr. Vatsal**
- Autonomous Composition of Vision Pipeline for Robot Perception •*Supervisors*: **Dr. Gubbi**, **Dr. Khadilkar**
- Multi Agent Reinforcement Learning algorithm for robot task allocation in industrial warehouses. •*Supervisors*: **Dr. Baranwal**

INTERNSHIPS

Google Summer of Code - Proposal   **May - August 2021**
Supervisors: **Dr. Manso**, **Dr. Bachiller**
- Migrating SONATA to Webots & benchmarking social navigation algorithms with SNGNN

Google Summer of Code, Mentor - Idea 14   **May - September 2022**
Supervisors: **Aditya Kapoor**, **Dr. Manso**
- Developing low fidelity-simulator for training RL agents that provides realistic social scenes.
- Integrating learned reward function to encode user-preferences for training RL agents.

SOCIAL VENTURES

CORD.ai - Founding Member   **May 2022 - Present**
Democratize open-source collaborative research among young professionals & do impactful AI research.
· Administrative work & lead research projects. • LinkedIn • Website

StraysCue - Founder   **June 2021 - Present**
StraysCue's mission is to help distressed stray animals get medical attention immediately.
Received XartUp Fellowship which is competitive with 8% selection rate. • Website

PUBLICATIONS

- **Conference**
  1. **Aditya Kapoor**, Vartika Sengar, Nijil George, Vighnesh Vatsal, Jayavardhana Gubbi, Balamuralidhar P and Arpan Pal ***Concept based Anomaly Detection in Retail Stores for Automatic Correction using Mobile Robots*** - Accepted at **IEEE SMC'23**

  2. **Aditya Kapoor**, Sushant Swamy, Luis Manso, Pilar Bachiller ***SocNavGym: A Reinforcement Learning Gym for Social Navigation*** - Accepted at **IEEE ROMAN'23**

  3. Benjamin Freed, **Aditya Kapoor**, Ian Abraham, Jeff Schneider and Howie Choset ***Learning Cooperative Multi-Agent Policies with Partial Reward Decoupling*** - Accepted at **IEEE RA-L'22 ICRA'22**Link

  4. Sujith Thomas, **Aditya Kapoor** and Narayanan Srinivasan. ***Supervised category learning: When do participants use a partially diagnostic feature?*** - Accepted at proceedings of the 43rd Annual Conference of the Cognitive Science Society. **Cognitive Science Society**. ● Link

  Workshop
  1. **Aditya Kapoor**, Nijil George, Vartika Sengar, Vighnesh Vatsal, Jayavardhana Gubbi, Balamuralidhar P and Arpan Pal ***Auto-TransRL: Autonomous Composition of Vision Pipelines for Robotic Perception*** ICRA Workshop, Robotic Perception and Mapping: Emerging Techniques ● Link

  2. Vartika Sengar, **Aditya Kapoor**, Nijil George, Vighnesh Vatsal, Jayavardhana Gubbi, Balamuralidhar P and Arpan Pal ***Challenges in Applying Robotics to Retail Store Management*** ICRA Workshop, Challenges in Applying Academic Research to Real-World Robotics (Lightning Talk ● Link

  3. Rishabh Baghel and **Aditya Kapoor** and Pilar Bachiller and Ronit R. Jorvekar and Daniel Rodriguez-Criado and Luis J. Manso ***A Toolkit to Generate Social Navigation Datasets*** Accepted for publication in the 21st International Workshop of Physical Agents (WAF2020) ● Link

  4. Sujith Thomas, **Aditya Kapoor** and Narayanan Srinivasan. ***Effect of a colour-based descriptor and stimuli presentation mode in unsupervised categorization.*** In S. Denison., M. Mack, Y. Xu, B.C. Armstrong (Eds.), Proceedings of the 42nd Annual Conference of the Cognitive Science Society (p. 3531). Cognitive Science Society. ● Link

  Preprints
  1. **Aditya Kapoor**, Benjamin Freed, Ian Abraham, Jeff Schneider, Howie Choset ***Assigning Credit with Partial Reward Decoupling in Multi-Agent Proximal Policy Optimization*** Under Review

  2. Sujith Thomas, **Aditya Kapoor**, Narayanan Srinivasan ***Preference for Unidimensional Categorization in visual category learning: An alternative explanation*** Under Review

  Patents
  1. ROY CHOUDHURY, Abhishek; VATSAL, Vighnesh; RANGARAJAN, Mahesh; BASA ANITHA, Naveen Kumar; **KAPOOR, Aditya**; GUBBI LAKSHMINARASIMHA, Jayavardhana Rama; SARAVANAN, Aravindhan; SENGAR, Vartika; PURUSHOTHAMAN,Balamuralidhar; PAL, Arpan; GEORGE, NIJIL ***METHODS AND SYSTEMS FOR AUTONOMOUS TASK COMPOSITION OF VISION PIPELINES USING AN ALGORITHM SELECTION FRAMEWORK*** Patent Pending

  2. GUBBI LAKSHMINARASIMHA, Jayavardhana Rama; SENGAR, Vartika; VATSAL, Vighnesh; PURUSHOTHAMAN, Balamuralidhar; PAL, Arpan; GEORGE, NIJIL; **KAPOOR, Aditya** ***SYSTEMS AND METHODS FOR ANOMALY DETECTION AND CORRECTION*** Patent Pending

RELEVANT PROJECTS

Project Kratos - Mars Rover   **June 2018 - March 2020**
- Researched, implemented and integrated a custom RRT* variant for autonomously navigating the Rover.
- 10th rank out of 35 participants in the IRC competition, and the best newly participating rover at the competition. GitHub ● Video Explanation

Speech Classification on SpiNNaker using Spiking Neural Networks　　　**August 2019 - June 2020**
Supervisor: **Basabdatta Sen Bhattacharya**
Built an inexpensive speech classification device that works on SpiNNaker Machine in collaboration with the Human
Brain Project • Poster Presentation • REPORT

OPEN SOURCE PROJECTS

· **GenRL**　　　**June 2020 - March 2021**
· Heading the MultiAgent Reinforcement Learning team. • Documentation • GitHub

GeNN　　　**March 2020 - May 2020**
· Worked on developing tutorials for PyGeNN. • GitHub

TEACHING AND LEADERSHIP ROLES

Adviser　　　**June 2020 - January 2022**
Autonomous Navigation Team - Project Kratos
Involved in teaching and preparing junior members of the autonomous team for the 2021 University Rover Challenge

Mentor　　　**June 2022 - Present**
Deep Reinforcement Learning for Social Navigation - CORD.ai
Involved in leading a team of 3 undergraduates to develop a hierarchical social navigation algorithm

NOTABLE ACHIEVEMENTS

- 10th rank Indian Rover Challenge 2020

- 29th rank globally in Flipkart Grid Challenge semi final round.

- Winners of the Goa Football League (GFA Division 2) for the first time in BITS History.

- Founding Member of Gym Club, BITS Pilani, Goa.