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Rupali Bhati

Education

Northeastern University (Supervisor: Christopher Amato) — *Boston, U.S.A.*
Ph.D., Computer Science — *Sep 2023 - Present*

Université Laval/ Mila (Supervisor: Audrey Durand) — *Quebec, Canada*
Masters, Computer Science (with thesis) — *Sep 2020 - Aug 2023*
GPA: 4.2/4.3

Delhi Technological University (Supervisor: Indu Sreedevi) — *New Delhi, India*
Bachelors, Electronics and Communication Engineering — *Aug 2012 - May 2016*
Aggregate percentage: 72.29% (WES equivalent 3.55/4.0)

Publications

6. Curriculum Learning for Cooperation in Multi-Agent Reinforcement Learning [link]
Rupali Bhati, SaiKrishna Gottipati, Clodéric Mars, Matthew E. Taylor
***NeurIPS 2023** Agent Learning in Open-Endedness Workshop*

5. Performative Prediction in Time Series: A Case Study [link]
Rupali Bhati, Jennifer Jones, Kristin Campbell, David Langelier, Anthony Reiman, Jonathan Greenland, Audrey Durand
***NeurIPS 2022** Workshop on Learning from Time Series for Health*

4. Summarizing Societies: Agent Abstraction in Multi-Agent Reinforcement Learning [link]
Amin Memarian, Maximilian Puelma Touzel, Matthew D Riemer, **Rupali Bhati**, Irina Rish
***ICLR 2022** From Cells to Societies: Collective Learning across Scales Workshop*

3. Interpret Your Care: Predicting the Evolution of Symptoms for Cancer Patients [link]
Rupali Bhati, Jennifer Jones, Audrey Durand
***AAAI 2022** Trustworthy AI for Healthcare Workshop*

2. CARL: Conditional-value-at-risk Adversarial Reinforcement Learning [link]
Mathieu Godbout, Maxime Heuillet, Sharath Chandra, **Rupali Bhati** & Audrey Durand
***AAAI 2022** Safe AI Workshop*

1. A Reinforcement Learning Approach to Jointly Adapt Vehicular Communications and Planning for Optimized Driving [link]
Mayank K. Pal, **Rupali Bhati**, Anil Sharma, Sanjit K. Kaul, Saket Anand & P.B.Sujit
IEEE ITSC 2018

Scholarship and Awards

- 2023 Scholarship for NeurIPS registration by ALOE Workshop.
- 2023 Khoury Distinguished Fellowship.
- 2023 Scholarship to attend the Cooperative AI Summer School.
- 2023 Sony Interactive Entertainment Scholarship to attend the Summer School on AI and Games. Awarded first place at Game AI Jam at the Summer School on AI and Games.
- 2022 **Google CSRMP**: Selected for Google Computer Science Research Mentorship Program with mentor Wenhao Yu.
- 2022 Second place at the Rendez-Vous IA Quebec.
- 2022 Institute of Intelligence and Data (IID) Laval Tuition Scholarship.
- 2022 Nominated for **Women in Artificial Intelligence Awards** North America.

Research and Professional Experience

Graduate Research Assistant, Northeastern University
Supervisor: Christopher Amato — *Sep 2023 - Present*

- Currently working on solving Decentralised POMDPs optimally.
- Applying a value decomposition algorithm DuelMIX to the environment of Starcraft Multi-Agent Challenge (SMACv2).

Research Intern
AI Redefined *Jan 2023 - Jul 2023*

- Worked on achieving cooperation in multi-agent settings via curriculum learning and reinforcement learning in the game of Overcooked.

Graduate Research Assistant, Université Laval & Mila
Supervisor: Audrey Durand *Sep 2020 - Aug 2023*

- Addressed the problem of performative prediction in time-series data for predicting cancer-related fatigue and pain and successfully found stable points by applying repeated performative training.
- Formulated agent abstraction in the multi-agent setting and showed how it can help disentangle non-stationarity in the game of Diplomacy and achieve higher compression.
- Implemented a risk-averse reinforcement learning method termed Conditional value-at-risk Adversarial Reinforcement Learning (CARL) by formulating it as a zero-sum Stackelberg Game.

Reinforcement Learning Consultant
Multiple Companies *Feb 2019 - Aug 2020*

- At Bert Labs, applied RL to increase the energy efficiency of a HVAC system. For a leading global FMCG company's headquarters building, using DQN, increased efficiency of their Air-Handling Unit system by over 70% as compared to classical PID logic.
- Conducted a week long workshop to teach fundamentals of RL to employees at Adventum. Consulted on application of RL to improve segmentation in medical images.
- Worked with CatapulZ to develop RL blue agents to Capture-The-Flag in cybersecurity applications.
- Applied DQN to continually increase account equity for trading in the Foreign Exchange Market.

Domain Expert
UpGrad *Sep 2018 - Jan 2019*

- Developed an end-to-end solution for a model inventory management problem to meet next-to-next day demand using DDQN.

Research Assistant, Indraprastha Institute of Information Technology - Delhi
Supervisor: Saket Anand *Sep 2017 - Aug 2018*

- Trained an autonomous vehicle to smartly adapt communications and planning actions, while achieving large driving utilities using Q-learning.

Data Analyst
KPMG *Jun 2016 - Aug 2017*

- In collaboration with Microsoft, developed an algorithm using policy iteration for automating 'Dynamic Pricing of Tickets' to maximise revenue and help reduce human effort by upto 70-80%.
- Researched use cases of predictive and descriptive analytics to provide business insights to various government organisations which helped them automate processes and boost efficiency.

Teaching Experience

- **Teaching Assistant**, *GIF-7005: Introduction to ML, Université Laval* *Fall 2021*
- **Mentor**, Codementor [link] *Fall 2019 - Summer 2020*
- **Teaching Assistant**, Coding Blocks [link] *Summer 2018*
- **Teaching Assistant**, UpGrad *Fall 2018*

Service

Reviewer: NeurIPS 2023, Montreal AI Symposium 2022, ITSC 2018
Facilitator: ICLR WiML UnWorkshop: Machine Learning for Physical Sciences 2022

Technical Skills

Languages: Python, LaTeX, SQL
Frameworks: PyTorch, TensorFlow
Tools: PyCharm, Tableau, Visual Studio, SQL Server Management Studio