

Vihang Patil

Ph.D Student in Reinforcement and Deep Learning

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EDUCATION

- **Johannes Kepler Universität Linz** Linz, Austria
Ph.D. student in Reinforcement Learning advised by Prof. Sepp Hochreiter Sep. 2019 – Ongoing
- **Universita Della Svizzera Italiana** Lugano, Switzerland
Master of Science in Artificial Intelligence (9.00/10) 2017 – 2019
- **ETH Zurich** Zurich, Switzerland
Exchange Semester and Master Thesis 2018 – 2019
- **University of Mumbai** Mumbai, India
Bachelor of Engineering in Electronics (First Class) 2011 – 2015

RESEARCH EXPERIENCE

- **Amazon** Seattle, USA
Applied Science Intern - AGI September 2023 - December 2023
- **Amazon** Seattle, USA
Applied Science Intern - Alexa AI January 2022 - May 2022
 - **Reinforcement Learning For Information Retrieval:** Worked at the intersection of Data Structures, Information Retrieval, graph neural networks, and Reinforcement Learning.
- **Institute for Machine Learning, Johannes Kepler Universität Linz** Austria
Research Assistant - Advised by Prof. Sepp Hochreiter Sep 2019 - Ongoing
- **Data Analytics Group, ETH Zurich** Zurich, Switzerland
Master Thesis Student - Advised by Dr. Aurelien Lucchi Oct 2018 - Sep 2019
 - **Reinforcement Learning under Constraints:** Studied various derivative-free methods for reinforcement learning under constraints. Developed a convergent evolutionary algorithm.
- **Institute for Machine Learning, Johannes Kepler Universität Linz** Austria
Visiting Student Researcher - Advised by Prof. Sepp Hochreiter Jun 2018 - Nov 2018
 - **Credit Assignment in StarCraft-II:** Implemented Reward redistribution for various mini-games in StarCraft-II with delay in reward and long episode length. Designed and trained deep neural network policies using PPO.
- **University of Mumbai** Mumbai, India
Student Researcher - Advised by Prof. Sandeep Mishra May 2014 - May 2015
 - **Path Planning for Robots:** Implemented various path-planning algorithms in a multi-robot system. The project was selected for ARM design contest and presented at ADCOM, Bangalore, 2014.

RESEARCH PAPERS

- **Contrastive Abstraction for Reinforcement Learning**
V. Patil, E. Rumetshofer, M. Hofmarcher, S. Hochreiter (Gen Plan Workshop 2023)
- **InfODist: Online distillation with Informative rewards improves generalization**
Siripurapu, Patil, Schweighofer, Dinu, Schmied, Holzleitner, Eghbal-Zadeh, Kopp, Hochreiter (Deep RL Workshop 2022)
- **Align-RUDDER: Learning From Few Demonstrations**
V. Patil, M. Hofmarcher, M. Dinu, M. Dorfer, P. Blies, J. Brandstetter, J. Arjona, S. Hochreiter (ICML 2022)
- **History Compression via Language Models in Reinforcement Learning**
F. Paischer, T. Adler, V. Patil, A. Bitto, S. Lehner, H. Eghbal-Zadeh, S. Hochreiter (ICML 2022)
- **A Globally Convergent Evolutionary Strategy for Stochastic Constrained Optimization**
V. Patil, Youssef Diouane*, Aurelien Lucchi* (AISTATS 2022)*

- **A Dataset Perspective on Offline Reinforcement Learning**
K. Schweighofer, A. Radler, M. Dinu, M. Hofmarcher, V. Patil, A. Bitto, H. Zadeh, S. Hochreiter (COLLAS 2022)
- **XAI and Strategy Extraction via Reward Redistribution**
M. Hofmarcher, M. Dinu, V. Patil, M. Dorfer, P. Blies, J. Brandstetter, J. Arjona, S. Hochreiter (XXAI - Book Chapter)
- **Reactive Exploration to Cope with Non-Stationarity in Lifelong Reinforcement Learning**
C. Steinparz, T. Schmied, F. Paischer, M. Dinu, V. Patil, A. Bitto, H. Zadeh, S. Hochreiter (COLLAS 2022)
- **Understanding the effect of Dataset Composition on Offline Reinforcement Learning**
K. Schweighofer, M. Dinu, M. Hofmarcher, A. Bitto, P. Renz, V. Patil, S. Hochreiter (Deep RL workshop Neurips 2021)
- **Modern Hopfield Networks for Return Decomposition for Delayed Rewards**
M. Widirich, M. Hofmarcher, A. Bitto, V. Patil, S. Hochreiter (Deep RL workshop Neurips 2021)
- **Guided Search for Maximum Entropy Reinforcement Learning**
V. Patil

COMPETITIONS

- **MyoChallenge at Neurips 2022**
Co-Winners of the MyoChallenge 2022 at Neurips 2022 Aug 2022 - Nov 2022
- **Robocon** Mumbai, India
Programmer/Team Leader - Advised by Prof. Prashant Upadhyay Dec 2013 - Mar 2015
 - **ABU-ROBOCON competition:** Co-founded the team in 2013 and was programming lead(2013-2014) and Team leader(2015). Designed, built, and programmed robots for tasks ranging from pick and place to playing double Badminton. Led a team of 20 students (2015) and oversaw mechanical, electronics, and software aspects of robot design. Improved rank to 10th from 40+ in the previous years in about 100 contesting teams at Robocon 2015.

INDUSTRY EXPERIENCE

- **Fractal Analytics** Mumbai, India
Associate (Data Science) Jan 2016 - Jul 2017
 - **Sales Incentive Optimizer:** Assisted a consumer products good major in incentivizing salesman using regression and clustering. Deployed the product to users on R-Shiny dashboard.
 - **Customer and Loyalty Analytic's:** Objective was to forecast sales qualified lead for 6 months. Developed an ARIMA time series model for forecasting sales leads and interfaced the model with Hive for forecasting on real time data.

OTHER

- **Reviewing Conferences**
- *NeurIPS (2023, 2022, 2021, 2020), ICML (2024, 2023, 2022, 2021, 2020), ICLR (2022, 2021, 2020)*
- **Deep Reinforcement Learning** Austria
- *Teaching Assistant - Johannes Kepler Universität Linz* 2024, 2023, 2021, 2020 Summer Semester

TECHNICAL SKILLS

- **Languages:** Python, MATLAB, R, HTML, CSS
- **Frameworks:** Pytorch, Tensorflow, ROS

SCHOLARSHIPS

- **LIT AI Lab PhD Scholarship** 2019 – 2024
- **Tution Fee Waiver Scholarship, Govt. of India** 2011 – 2015
Awarded to top 5% of the class.

LINKS

- Github, Website, Google Scholar, Twitter