Vihang Patil

Ph.D Student in Reinforcement Learning

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Education

- **Johannes Kepler Universität Linz** — Linz, Austria
  Ph.D student in Reinforcement Learning advised by Prof. Sepp Hochreiter — *Sep. 2020 – 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 (9.5/10) — *2018 – 2019*
- **University of Mumbai** — Mumbai, India
  Bachelor of Engineering in Electronics (First Class) — *2011 – 2015*

Research Papers

- **Align-RUDDER: Learning From Few Demonstrations**
  V. Patil, M. Hofmarcher, M. Dinu, M. Dorfer, P. Blies, J. Brandstetter, J. Arjona, S. Hochreiter
- **A Provably Convergent Evolutionary Strategy for Stochastic Constrained Optimization**
  V. Patil, Youssef Diouane, Aurelien Lucchi
- **Understanding the effect of Dataset Composition on Offline Reinforcement Learning**
  K. Schweighofer, M. Dinu, M. Hofmarcher, A. Bitto, P. Renz, V. Patil, S. Hochreiter
- **Modern Hopfield Networks for Return Decomposition for Delayed Rewards**
  M. Widirich, M. Hofmarcher, A. Bitto, V. Patil, S. Hochreiter (Accepted at Deep RL workshop Neurips 2021)

Research Experience

- **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
  Visiting Student Researcher - 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 which combines evolution and policy gradient.
- **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*

Teaching Experience

- **Deep Reinforcement Learning** — Austria
  Teaching Assistant - Johannes Kepler Universität Linz — *2021 Summer Semester*
- **Deep Reinforcement Learning** — Austria
  Teaching Assistant - Johannes Kepler Universität Linz — *2020 Summer Semester*

Selected Academic Projects

- **Distributed Asynchronous Advantage Actor Critic**: Implemented A3C and analysed its scaling properties over a cluster. Also, discussed new ways of making the algorithm more scalable. *Feb - May 2018*
- **Deep Reinforcement Learning agent for StarCraft II**: Implemented Dueling-DQN and A3C for mini-games of StarCraft-II. *Deep Learning Lab Nov-2017*
- **Geometric Matrix Completion with Recurrent Multi-Graph Neural Networks**: Replicated results for the paper "Geometric Matrix Completion with Recurrent Multi-Graph Neural Networks". Further extended it for separable convolutions. *Geometric Deep Learning May - Jun 2019*

Professional 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.
  - **Macro-Economic Driver Analysis**: Developed a regression model to assess impact of macroeconomic factors on sales for an African Nation.
  - **Predictive Land Change - Concept**: Merged spatial data and analyzed trends in land change.

Technical Skills

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

Scholarships

- **LIT AI Lab PhD Scholarship**
  2019 – 2023
- **Tution Fee Waiver Scholarship, Govt. of India**
  Awarded to top 5% of the class. *2011 – 2015*

Links

- Github