

# Shibhansh Dohare

Ph.D. student, Computing Science, University of Alberta  
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## Educational Qualifications

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- Ph.D. in Computing Science Ongoing  
University of Alberta; Advisors - Dr. Richard S. Sutton and Dr. Rupam Mahmood
- Master of Science in Computing Science 2020  
University of Alberta; Advisors - Dr. Richard S. Sutton and Dr. Rupam Mahmood  
Thesis - *The Interplay of Search and Gradient Descent in Semi-stationary Learning Problems*
- Bachelor of Technology in Computer Science and Engineering 2018  
Indian Institute of Technology Kanpur

## Publications

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### Journals

- *Loss of Plasticity in Deep Continual Learning*. Shibhansh Dohare, J Fernando Hernandez-Garcia, Qingfeng Lan, Parash Rahman, Richard S. Sutton, A. Rupam Mahmood. [Nature](#), 2024.

### Refereed Conferences

- *Automatic Noise Filtering with Dynamic Sparse Training in Deep Reinforcement Learning*. Bram Grooten, Ghada Sokar, Shibhansh Dohare, Elena Mocanu, Matthew Taylor, Mykola Pechenizkiy, Decebal Constantin Mocanu. AAMAS 2023.
- *Gamma-Nets: Generalizing Value Estimation over Timescale*. Craig Sherstan, Shibhansh Dohare, James MacGlashan, Patrick M. Pilarski. AAAI 2020, *Oral Presentation*.

### Workshops & Lightly-Refereed Conferences

- *Overcoming Policy Collapse in Deep Reinforcement Learning*. Shibhansh Dohare, Qingfeng Lan, Rupam Mahmood. Sixteenth European Workshop on Reinforcement Learning, 2023.
- *Automatic Noise Filtering with Dynamic Sparse Training in Deep Reinforcement Learning*. Bram Grooten, Ghada Sokar, Shibhansh Dohare, Elena Mocanu, Matthew Taylor, Mykola Pechenizkiy, Decebal Constantin Mocanu. Spotlight at Sparsity in Neural Networks workshop at ICLR 2023.
- *Continual Backprop: Stochastic Gradient Descent with Persistent Randomness*. Shibhansh Dohare, Richard S. Sutton, Rupam Mahmood. Reinforcement Learning and Decision Making (RLDM), 2022.
- *The Interplay of Search and Gradient Descent in Semi-stationary Learning Problems*. Shibhansh Dohare, Rupam Mahmood, Richard S. Sutton. Beyond Backpropagation, Workshop at NeurIPS 2020.
- *Unsupervised semantic abstractive summarization*. Shibhansh Dohare, Vivek Gupta, Harish Karnick. In Proceedings of ACL 2018, Student Research Workshop.

## Talks and Invited Discussions

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- Guest on AMII's Approximately Correct Podcast September 2024  
What it's like to publish in Nature [Spotify]
- Guest on **Nature Podcast** August 2024  
AI can't learn new things forever — an algorithm can fix that [Spotify]
- **Panelist** for discussion on Continual Learning Nov 2023  
Thought Club of Huawei Canada Research Institute
- Loss of Plasticity in Deep Continual Learning Nov 2023  
Openmind Continual Learning Retreat
- Maintaining Plasticity in Deep Continual Learning [video]  
**Keynote** at CoLLAs, shared with Dr. Richard S. Sutton August 2022  
RL Sofa, MILA Nov 2022  
AI Seminar, University of Alberta Jan 2023  
Barbados Reinforcement Learning Workshop Feb 2023

- Tea Time Talk — University of Alberta 2019, 2020, 2021, 2023
- The Interplay of Search and Gradient Descent in Semi-stationary Learning Problems *Sep 2020*  
M.Sc. thesis seminar, University of Alberta

## Achievements and Accolades

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- Received the University of Alberta Doctoral Recruitment Award, 2021
- Co-led the university's team in our debut in the National Competition on Student Autonomous Underwater Vehicle (2016); we were the first runner-ups among 17 teams
- **Ranked 144** among the top 150,000 students selected from JEE MAINS in JEE Advanced '14
- Scored 325/360 (**99.99 percentile**) in JEE-MAINS examination '14 over 1.3 million students
- Awarded KVPY fellowship in 2013-14 organized by the Department of Science and Technology, India

## Experiences

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- *Graduate Research Assistant* *May'19 - Ongoing*  
RLAI Lab at the University of Alberta
- *Teaching Assistant*, University of Alberta
  - CMPUT 365: Introduction to Reinforcement Learning *Jan'24 - Apr'24*
  - CMPUT 365: Introduction to Reinforcement Learning *Jan'23 - Apr'23*
  - CMPUT 397: Reinforcement Learning *Jan'22 - Apr'22*
  - CMPUT 296: Basics of Machine Learning *Jan'20 - Apr'20*
- *Reinforcement Learning Researcher*, NTWIST *Jun'21 - Dec'21*
- *Data Scientist Contract*, Alberta Machine Intelligence Institute (AMII) *Jan'20 - Apr'20*
- *Undergraduate Researcher* *Jan'17 - Dec'17*  
Mentor: Prof. Harish Karnick, Dept. of Computer Science and Engineering, IIT Kanpur

## Research Interests

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- My long-term research goal is to understand the working of our minds. Specifically, to find the fundamental computational principles that give rise to the Mind, popularly known as Artificial Intelligence
- In pursuit of this goal, I am working on various aspects of online representation learning, reinforcement learning, and deep learning
- Most recently, I have focused on designing algorithms that can keep learning new things as our recent work showed that standard deep learning algorithms slowly lose plasticity, the ability to keep learning new things

## Technical Skills

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- Proficient in languages like Python, and C/C++. Seven years of experience with Linux-based operating systems, Shell scripting (Bash), and version control (Git)
- In-depth experience with popular machine learning and linear algebra libraries like Pytorch, Tensorflow, Numpy, Pandas, sklearn
- Ability to communicate clearly as demonstrated by published works and public presentations

## Academic Services

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- Co-organized the first RLAI Summit 2024
- NeurIPS, (Top) Reviewer 2023, 2024
- CoLLAs, Reviewer 2023, 2024
- ICLR, Reviewer 2024
- ICML, Reviewer 2024
- IJCAI, Reviewer 2024
- RLC, Reviewer 2024
- CVPR Continual Learning Workshop, Reviewer 2024
- IMOL Workshop at NeurIPS, Reviewer 2023
- CIFAR Deep Learning & Reinforcement Learning Summer School, Reviewed applications 2023, 2024