

# Shivam Garg

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EXPERIENCE	<b>Research Assistant, University of Alberta</b> Sept 2021–Aug 2022 <ul style="list-style-type: none"><li>– Working with Prof. Csaba Szepesvári on reinforcement learning theory (mainly policy gradient methods).</li></ul> <b>Internship at Samsung R&amp;D Institute India, Bangalore</b> May–Jul 2017 <ul style="list-style-type: none"><li>– Intern in the Android Platform team.</li><li>– Worked on inducing traces in the Linux kernel for data logging.</li><li>– Investigated various machine learning techniques for handling the above data.</li></ul>
EDUCATION	<b>University of Alberta, Canada</b> 2019–21 <ul style="list-style-type: none"><li>Master of Science (Thesis) in Computing Science</li><li>Supervisors: Prof. Rupam Mahmood and Prof. Martha White</li><li>GPA: 4.0/4.0</li></ul> <b>Indian Institute of Technology (BHU) Varanasi, India</b> 2014–19 <ul style="list-style-type: none"><li>Integrated Dual Degree [BTech (Hons.) + MTech] in Computer Science and Engineering</li><li>GPA: 9.77/10.0 (ranked 1/82 in my class)</li></ul>
PUBLICATIONS	<b>An Alternate Policy Gradient Estimator for Softmax Policies.</b> [PDF] Shivam Garg, Samuele Tosatto, Yangchen Pan, Martha White, A. Rupam Mahmood. <i>International Conference on Artificial Intelligence and Statistics (AISTATS)</i> , 2022.  <b>A General Class of Surrogate Functions for Stable and Efficient Reinforcement Learning.</b> [PDF] Sharan Vaswani, Olivier Bachem, Simone Totaro, Robert Müller, Shivam Garg, Matthieu Geist, Marlos C. Machado, Pablo Samuel Castro, Nicolas Le Roux. <i>International Conference on Artificial Intelligence and Statistics (AISTATS)</i> , 2022. [Oral]  <b>Gradient Temporal-Difference Learning with Regularized Corrections.</b> [PDF] Sina Ghiassian, Andrew Patterson, Shivam Garg, Dhawal Gupta, Adam White, Martha White. <i>International Conference on Machine Learning (ICML)</i> , 2020.  <b>Object Sequences: Encoding Categorical and Spatial Information for a Yes/No Visual Question Answering Task.</b> [PDF] [DOI] Shivam Garg and Rajeev Srivastava. <i>IET Computer Vision</i> , 2018.
WORKSHOP PAPERS	<b>Enabling Safe Exploration of Action Space in Real-World Robots.</b> [PDF] Shivam Garg, Homayoon Farrahi, A. Rupam Mahmood. <i>Virtual Conference on Reinforcement Learning for Real Life (RL4RealLife)</i> , 2020.  <b>Mirror Descent for Robust Reinforcement Learning.</b> [PDF] Shivam Garg. <i>Indian Workshop on Machine Learning (iWML)</i> , 2018.
THESES	<b>Analysis of an Alternate Policy Gradient Estimator for Softmax Policies.</b> [PDF] Shivam Garg. <i>M.Sc. Thesis, University of Alberta</i> , 2021.  <b>Coordinated Exploration for Concurrent Reinforcement Learning.</b> [PDF] Shivam Garg. <i>M.Tech. Thesis, Indian Institute of Technology (BHU) Varanasi</i> , 2019.

TEACHING ASSISTANT	<b>University of Alberta</b>	
	CMPUT 653 – Theoretical Foundations of RL (Grad) <a href="#">[Link]</a>	Winter 2021
	CMPUT 655 – Reinforcement Learning 1 (Grad) <a href="#">[Link]</a>	Fall 2020
	CMPUT 397 – Reinforcement Learning <a href="#">[Link]</a>	Winter 2020
	CMPUT 366 – Intelligent Systems	Fall 2019
<b>IIT (BHU) Varanasi</b>		
	CSE 205 – IT Workshop 2	Aug–Dec 2018
	CSE 241N – Artificial Intelligence	Jan–May 2018
	CSO 101 – Computer Programming	Jan–May 2019, Jan–May 2018, Aug–Dec 2017
		Jan–May 2017, Aug–Dec 2016
SKILLS	Python · PyTorch · C · C++ · Matlab · L <sup>A</sup> T <sub>E</sub> X · Emacs	
ACHIEVEMENTS	<b>Gold Medal, IIT (BHU) Varanasi</b>	2019
	For being ranked first in the Computer Sci. & Engg. batch of 2014–19	
	<b>Awarded CBSE certificate of merit</b>	2014
	For being amongst the top 0.1% candidates in Physics (class XII)	
	<b>Successfully qualified Regional Mathematical Olympiad, UP</b>	2012
	State level for International Mathematical Olympiad (~ 300 students selected nationally)	
	<b>National Talent Search Scholarship recipient</b>	2010
	Awarded by NCERT, Government of India (~ 1000 students selected nationally)	
SERVICE	Reviewer for AISTATS 2022 (a top 10% reviewer) • Reviewer for SSL-RL (ICLR Workshop) 2021 • Helped create Python notebooks for the “Policy Optimization in RL” tutorial at NeurIPS 2020 <a href="#">[Link]</a> • Student reporter for CIFAR Deep Learning and Reinforcement Learning Summer School 2020 • Sub-reviewer for one paper at ICML 2020 • Served as the Vice President of the Computing Science Graduate Student Association, University of Alberta (2020–21).	
COURSES	Graduate at UAlberta	
	– RL with Robots (Grade: A+)	– Reinforcement Learning 2 (Grade: A+)*
	– Intro. to Machine Learning (Grade: A+)	
	Undergraduate at IIT (BHU)	
	– Stochastic Process	– Linear Algebra (Online)
	– Probability and Statistics	– Intelligent Computing (Neural Networks and Genetic Algorithms)
	– Optimization Techniques	
	– Natural Language Processing	
	– Computer Vision	– Artificial Intelligence
	* Unofficial grade. No official grades awarded that semester due to COVID-19.	
OTHER PROJECTS	Utility of Traces in Online Value Prediction with TD( $\lambda$ ) <a href="#">[Link]</a>	April’20
	Policy Learning using Function Approximators	Aug–Nov’17
	Emerging and Rare Entity Recognition (NLP)	Dec’17
	Cryptography Schemes for Secure Money Transfer <a href="#">[Link]</a>	Nov’17
	Zoutendijk’s Method for Constrained Optimization	Nov’17
	Image Classification and Segmentation	Aug’16–May’17
	Functional Projective Synchronization of Chaotic Systems <a href="#">[Link]</a>	Nov’16
	In-memory Relational Algebra System <a href="#">[Link]</a>	Aug–Nov’16
	Feedback Portal (a Django web application) <a href="#">[Link]</a>	Aug–Nov’16
	Multi-document Text Summarizer	Jan–May’16
	8-bit CPU simulation on Logisim	Oct’15
EXTRA-CURRICULAR	I enjoy going for long walks, cycling, and climbing; and playing harmonica, table tennis, and Go (the board game).	