

Dhawal Gupta | CV

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Masters student in Computing Science at the University of Alberta. I conduct research in the field of Reinforcement Learning (RL), particularly in the area of off policy learning. I am interested in the areas of online learning for developing decision making policies in uncertain environments, with an inclination towards practicality and applicability.

Education

- University of Alberta** **Alberta, Canada**
 ◦ *Master of Science (M.Sc.) , Computing Science* *2019–Ongoing*
 Supervisor: Martha White
 GPA: 4.0/4.0
- Indian Institute of Technology (IIT)** **Patna, India**
 ◦ *Bachelor of Technology (B.Tech) , Computer Science and Engineering* *2015–2019*
 Supervisor: Sriparna Saha & Pushpak Bhattacharyya
 CPI: 9.49/10 , Rank Department: 3/55
- Delhi Public School R.K. Puram** **New Delhi, India**
 ◦ *All India Senior Secondary Examination CBSE,* *2014–2015*
 Percentage : 96.2

Publications

1. Ghiassian, S., Patterson, A., Garg, S., **Gupta, D.**, White, A., & White, M. (2020). Gradient Temporal-Difference Learning with Regularized Corrections. *Proceedings of the 37th International Conference on Machine Learning (ICML)*, Vienna, Austria, PMLR 119, 2020
2. Saha, T.*, **Gupta, D.***, Saha, S., & Bhattacharyya, P. (2020). Towards Integrated Dialogue Policy Learning for Multiple Domains and Intents using Hierarchical Deep Reinforcement Learning. *Expert Systems with Applications*, 113650. <https://doi.org/10.1016/j.eswa.2020.113650>
3. Saha, T., **Gupta, D.**, Saha, S., & Bhattacharyya, P. (2020). A hierarchical approach for efficient multi-intent dialogue policy learning. *Multimedia Tools and Applications*. <https://doi.org/10.1007/s11042-020-09070-7>
4. Saha, T., **Gupta, D.**, Saha, S., & Bhattacharyya, P. (2020). Emotion Aided Dialogue Act Classification for Task-Independent Conversations in a Multi-modal Framework. *Cognitive Computation*. <https://doi.org/10.1007/s12559-019-09704-5>
5. Saha, T., **Gupta, D.**, Saha, S., & Bhattacharyya, P. (2018). Reinforcement Learning Based Dialogue Management Strategy. In L. Cheng, A. C. S. Leung, & S. Ozawa (Eds.), *Neural Information Processing* (pp. 359–372). Springer International Publishing. https://doi.org/10.1007/978-3-030-04182-3_32
6. Agrawal, K., Jain, K., **Gupta, D.**, Srivastav, R., Agnihotri, A., & Thakur, A. (2018, November 2). Bayesian Optimization Based Terrestrial Gait Tuning for a 12-DOF Alligator-Inspired Robot With Active Body Undulation. *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. <https://doi.org/10.1115/DETC2018-86033>

Patents

1. Easa, Z., **Gupta, D.**, Mathew, J. & Mathew, A. (2017). “System and method for detecting change in occupancy status of a slot over a platform.” *Pending at Indian Patent Office : Application No. 201731036379*

Work/Research Experience

- Research Assistant, RLAI & AMII** **Edmonton, Canada**
 1. *supervised by Dr. Martha White* *May 2020 – Current*
 - Working on Reinforcement Learning, specifically Off Policy Learning, Variance Reduction, Optimization of TD Learning and better learning architectures for online learning.
- TA for CMPUT 397, University of Alberta** **Edmonton, Canada**
 2. *instructed by Dr. Martha White* *August 2020 – Current*
 - TA for Fall 2020, Introduction to Reinforcement Learning Course.

3. **TA for CMPUT 175, University of Alberta** **Edmonton, Canada**
instructed by Dr. Megan Flanders, Dr. Geoff Hollis & Dr. Osmar Zaiane *August 2019 – April 2020*
 - o TA for Fall 2019 and Winter 2020
4. **Research Intern, IBM Research India** **Bangalore, India**
advised by Dr. Kedar Kulkarni; Team Manager: Dr. Amith Singhee *May 2018 – August 2018*
 - o Problem statement : Anomaly detection in huge amounts of unstructured time series sensor data.
 - o Multiple assets: Clustering of similar assets based on mathematical models.
 - o Sparse Mix of Gaussian graphical models to capture the multi modality for multiple variables.
 - o Formulation of distance metric for GMM's to cluster.
 - o Using clustering to identify anomalies.
5. **Summer Intern, Indraprastha Institute of Information Technology (IIIT)** **Delhi, India**
advised by Dr. Sanjit Kaul and Dr. Saket Anand *May 2017 – July 2017*
 - o Decision making system for self driving cars.
 - o Inverse RL to extract linear reward function for the car agent.
 - o A 3 layer deep neural net as our value function and a 5 dimensional state vector for the system
 - o Experimental setup monitored using Kinect. [Code]

Relevant Coursework

Graduate Courses at UofA

Introduction to Machine Learning (A+)

Reinforcement Learning 2 (A+, Unofficial)

Reinforcement Learning with Robots (A)

Independent Study on Off Policy RL (CR)

Undergraduate Courses at IIT Patna

Artificial Intelligence

Foundations for Machine Learning

Network Science

Probability and Stochastic Process

Switching Theory

Computer Architecture

Operating System

Multi Variate Calculus

Algorithms and Data Structures

Formal Language and Automata

Computer Networks

Linear Algebra

Technical skills

- o **Programming Languages:** Proficient in: Python, C/C++
 Familiar: Bash, Matlab, MIPS(32), Verilog, Embedded C, Java, Latex
 Basic : HTML, CSS, PHP, SQL.
- o **Tools:** Proficient in: PyTorch, ROS, Matplotlib Numpy, Keras, Scikit-Learn, Pandas, Docker
 Familiar with Tensorflow, Theano, OpenCV, Gazebo.
- o **Platforms:** MAC OS, Linux, Windows

Service and Extra-Curricular

- o Organizer, RL Social, ICML 2020 & ICLR 2020
- o Founder & Coordinator, Tinkerer's Lab, IIT Patna
- o Technical Secretary, Gymkhana, IIT Patna
- o Mentor, Robotics Lab, BCE Patna

Awards, Grants & Honors

- o **Represented IIT Patna @ FINE**
 Display of Innovation activities at Rashtrapati Bhawan
 Interacted with the Secretary and President of India.
- o **Awarded Travel Grant to Attend ASME IDETC**
 INAE Travel Grant upto INR 100,000.
- o **Prototype Development Grant of INR 50,000**
 BOSCH DNA challenge
- o **Prize of INR 7,500 for ISED 2016**
 Cash award of embedded design in ISED
- o **Cash Prize of INR 5,000 for Intel RPC 2017**
 Received a cash prize for being in top 20 teams all over India
 in the Intel Rapid Prototyping Challenge (2017) at Bengaluru.