

WORK EXPERIENCE

- **Amazon** (*Research Intern*) May 2021 - Aug 2021
Created a new benchmark for multi-agent cooperative setting, with heterogeneous agents.
- **Microsoft Research** (*Research Intern*) May 2019 - Aug 2019
Worked on developing new video analysis algorithms using variational autoencoders.
- **Google** (*Software Engineering Intern*) May 2016 - Aug 2016
Worked on improving transliteration system for Android keyboard, using finite state transducers.
- **NVIDIA Autonomous Driving Team** (*Machine Learning Intern*) Feb 2016 - May 2016
Analysed noise sensitivity of the training pipeline, and experimented with memory-based networks to improve performance.

EDUCATION

- **University of Texas at Austin** Aug 2017 - Present
PhD candidate in Computer Science
CGPA: **4.0 / 4.0**
- **Courant Institute of Mathematical Sciences, New York University** Sept 2014 - May 2016
Master of Science in Computer Science
CGPA: **4.0/4.0**
- **Indian Institute of Technology, Delhi** July 2010 - June 2014
Bachelor of Technology in Computer Science and Engineering
CGPA: **9.0/10.0**

PUBLICATIONS

- **PixL2R: Guiding Reinforcement Learning Using Natural Language by Mapping Pixels to Rewards.** Prasoon Goyal, Scott Niekum, Raymond J. Mooney. *Conference on Robot Learning (CoRL), 2020.*
Extended our prior work to generate intermediate rewards for a reinforcement learning agent from raw pixels, given a natural language instruction, resulting in faster policy training on several robot manipulation tasks.
- **Using Natural Language for Reward Shaping in Reinforcement Learning.** Prasoon Goyal, Scott Niekum, Raymond J. Mooney. *International Joint Conference on Artificial Intelligence (IJCAI) 2019.*
Developed a data-driven framework that provides intermediate rewards to a reinforcement learning agent depending on how well its actions align with a given natural language instruction.
- **Nonparametric Variational Auto-encoders for Hierarchical Representation Learning.** Prasoon Goyal, Zhiting Hu, Xiaodan Liang, Chenyu Wang, Eric Xing. *International Conference on Computer Vision (ICCV) 2017.*
Developed a framework that combines variational auto-encoders with Bayesian non-parametric priors, to learn rich hierarchical representation of sequential data such as videos in an unsupervised setting.
- **Transliterated Mobile Keyboard Input via Weighted Finite-State Transducers.** Lars Hellsten, Brian Roark, Prasoon Goyal, Cyril Allauzen, Françoise Beaufays, Tom Ouyang, Michael Riley, David Rybach. *International Conference on Finite-State Methods and Natural Language Processing (FSMNL) 2017.*
Proposed an extension to mobile keyboard input decoder to improve accuracy and reduce latency over existing methods for transliteration, while operating under strict memory constraints. The system has been launched in Google Gboard.
- **Kernel Extraction via Voted Risk Minimization.** Corinna Cortes, Prasoon Goyal, Vitaly Kuznetsov, Mehryar Mohri. *Neural Information Processing Systems (NeurIPS) Workshop 2015.*
Developed a kernel selection algorithm, which can learn complex decision boundaries from a set of kernels with varying complexities without overfitting, by penalizing kernels using local Rademacher complexity based bounds.
- **New Rules for Domain Independent Lifted MAP Inference.** Happy Mittal, Prasoon Goyal, Vibhav Gogate and Parag Singla. *Neural Information Processing Systems (NeurIPS), 2014.*
Proposed two new rules that make maximum-a-posteriori (MAP) inference domain independent, outperforming the state-of-the-art, on a large class of Markov logic networks.
- **Local Deep Kernel Learning for Efficient Non-linear SVM Prediction.** Cijo Jose, Prasoon Goyal, Parv Aggrwal and Manik Varma. *International Conference on Machine Learning (ICML) 2013.*
Proposed a sparse feature mapping formulation for prediction in non-linear SVMs achieving orders of magnitude speedup over existing algorithms.

RELEVANT COURSEWORK

- Autonomous Robots, Robot Learning, Graphics Processing Units, Deep Learning, Natural Language Processing, Numerical Optimization, Probabilistic Graphical Models.

TECHNICAL SKILLS

- Programming Languages Python, C, C++, Java, MATLAB, Standard ML, SQL
- Other Softwares & Skills \LaTeX , PyTorch, TensorFlow