Sumedh Pendurkar

(+1) 9797396269 | sumedhpendurkar@tamu.edu | sumedhpendurkar.github.io | sumedhpendurkar | Scholar

Research Interests

Reinforcement Learning, Machine Learning, Combinatorial optimization.

Education

Texas A&M University — *TX, USA*

Doctor of Philosophy in Computer Science, 4/4 GPA — *September 2019 - Present*

- *Key courses*: Reinforcement Learning, Applied Bayes Methods, Machine Learning, AI, Analysis of Algorithms
- *Advisor*: Dr. Guni Sharon

College of Engineering, Pune — *Pune, India*

Bachelor of Technology in Computer Engineering, 9.13/10 CGPA — *July 2015 - May 2019*

- *Key courses*: Data Science, Design and Analysis of Algorithms, AI, Theory of Computation, Introduction to Graph Theory

Selected Publications

A Joint Imitation-Reinforcement Learning Framework for Reduced Baseline Regret

S. Dey, S. Pendurkar, J. Hanna, G. Sharon — *2021*

In submission

Single Image Super-Resolution for Optical Satellite Scenes Using Deep Deconvolutional Network — *Trento, Italy*

S. Pendurkar, B. Banerjee, S. Saha, F. Bovolo — *2019*

International Conference on Image Analysis and Processing (ICIAP)

Semantic Guided Deep Unsupervised Image Segmentation — *Trento, Italy*

S. Saha, B. Banerjee, S. Sudhakaran, S. Pendurkar — *2019*

International Conference on Image Analysis and Processing (ICIAP)

Research Experience

Indian Institute of Technology (IIT), Roorkee — *Roorkee, India*

Research Intern — *May 2017 - July 2017*

- Designed deconv-net based model for single image super-resolution on optical satellite images, achieved 0.55 dB PSNR over SOTA
- Investigated zero-shot techniques for super-resolution of optical satellite images
- *Advisor:* Dr. Biplab Banerjee

Professional Experience

Goldman Sachs — *Bangalore, India*

Summer Technology Analyst (Intern) — *May 2018 - July 2018*

- Worked on UI part of a change management tool for business units using Angular 6
- Developed RESTful web services in Java for the change management tool, currently used in production

Technical Skills

Programming Python, C, Javascript

Tools and Libraries PyTorch, Keras, Git, Angular, GTK, Latex

Projects

Learning heuristic function for large search problems *September 2020 - Present*

- Proposed a deep value iteration based method to learn the optimal heuristic function for search problems with large state spaces
- Proposed method starts with a admissible heuristic with greedy search gradually shifting to learnt heuristic function leading to optimal costs and faster searches on tile, pancake puzzles (under preparation for ICML)
- *Advisors:* Dr. Guni Sharon, Dr. Sven Koenig

Gradient free optimization for expensive evaluation functions *June 2020 - Present*

- Investigating deep Bayesian optimization techniques for optimization problems where the evaluation function is expensive, and gradients are not available
- Currently looking into neural network and regularization as approximation to deep Gaussian process, and it effects on exploration/exploitation
- *Advisor:* Dr. Guni Sharon

Light-Regularized-GANs for low light images *September 2019 - Present*

- Adding an intensity based regularisation to LightEnhancementGAN, to control the intensity of light added to the image without any external supervision

Open-Ended Visual Question Answering System *April 2018 - May 2019*

- Designed an attention based multi-modal fusion model which gives a free flowing answer to a question based on video as it attends to both, question words and video while outputting every single word of answer

Word completion feature for GNU-Nano text editor *July 2016 - December 2016*

- Authored a word-completion feature which completes the current word based on the text present in the open file
- This feature was incorporated in GNU-Nano, an open source project

Communication/on-board controller system for pico satellite *April 2016 - July 2018*

- Developed shared memory protocols for two asynchronous controllers for on-board data sharing on a pico-satellite
- Worked on interfacing various peripherals with on-board controllers for data collection

Honors & Awards

2020	**First Place**, 2020 TAMIDS Data Science Competition	*TX, USA*
2018	**Deloitte Innovation Award**, Ministry of Road and Railways, Smart India Hackathon	*Nagpur, India*
2018	**Finalist (40/1980)**, Philips Hackathon on Data Science	*Bangalore, India*
2013	**Scholarship Holder**, National Talent Search Exam (NTSE), awarded to top 1000 students in India	*India*

Professional Activities

2020 **Reviewer**, ICRA 2021