

Sumedh Pendurkar

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Research Interests

Reinforcement Learning, Heuristic Search, Combinatorial Optimization, AI

Education

Texas A&M University

[TX, USA](#)

Doctor of Philosophy in Computer Science, 4/4 GPA

August 2020 - Present

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

College of Engineering, Pune

[Pune, India](#)

Bachelor of Technology in Computer Engineering, 9.12/10 CGPA

July 2015 - May 2019

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

Selected Publications

The (Un)Scalability of Informed Heuristic Function Estimation in NP-Hard Search Problems

S. Pendurkar, T. Huang, B. Juba, J. Zhang, S. Koenig, G. Sharon
Under Submission.

2023

Curriculum Generation for Learning Guiding Functions in State-Space Search Algorithms

S. Pendurkar, L. Lelis, N. Sturtevant, G. Sharon
Under Submission.

2023

Defining and Achieving an “Appropriate” Curriculum in Reinforcement Learning

V. Bajaj, S. Pendurkar, G. Sharon
Under Submission.

2023

Bilevel Entropy based Mechanism Design for Balancing Meta in Video Games

[London, UK](#)

S. Pendurkar, C. Chow, J. Luo, G. Sharon

2023

International Conference on Autonomous Agents and Multiagent Systems (AAMAS)

Comparison between popular Genetic Algorithm (GA)-based tool and Covariance Matrix Adaptation - Evolutionary Strategy (CMA-ES) for optimizing indoor daylight

[China](#)

M. Anis, S. Pendurkar, Y. Yi, G. Sharon

2023

IBPSA International Conference and Exhibition on Building Simulation

The (Un)Scalability of Heuristic Approximators for NP-Hard Search Problems

[New Orleans, USA](#)

S. Pendurkar, T. Huang, S. Koenig, G. Sharon

2022

Proceedings of NeurIPS workshop. ICBINB.

A Discussion on the Scalability of Heuristic Approximators

[Vienna, Austria](#)

S. Pendurkar, T. Huang, S. Koenig, G. Sharon

2022

Symposium on Combinatorial Search (Extended Abstract)

A Joint Imitation-Reinforcement Learning Framework for Reduced Baseline Regret

[Prague, Czech Republic](#)

S. Dey, S. Pendurkar, G. Sharon, JP. Hanna

2021

International Conference on Intelligent Robots and Systems (IROS)

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)

Experience

University of Alberta

Edmonton, AB, Canada

Visiting Student

May 2023 - July 2023

- Worked on developing curriculum generation methods for various guided state-space search algorithms.
- Proposed approach (TSC) achieved 5-36 times better performance as compared to the baseline algorithms.
- *Supervisor:* Dr. Nathan Sturtevant and Dr. Levi Lelis

Niantic Inc.

Sunnyvale, CA, USA

Machine Learning Scientist Intern

May 2022 - Aug 2022

- Worked on game meta balancing methods for various peer vs peer games, such as Pokemon video games
- The work resulted in a publication at AAMAS

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

Indian Institute of Technology (IIT), Roorkee

Roorkee, India

Visiting Student

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. Resulted in a publication at ICIAP.
- Investigated zero-shot techniques for super-resolution of optical satellite images
- *Supervisor:* Dr. Biplab Banerjee

Technical Skills

Programming Python, C, Javascript

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

Other Projects

Sampling an action from a Q function in continuous action spaces

August 2021 - May 2022

- Investigating various sampling techniques, to efficiently sample actions from the Q function which would resemble Boltzmann sampling in discrete space
- Proposed method would enable agents to have better exploration than SOTA algorithms like DDPG, and would not have any assumptions on distribution like SAC
- *Advisors:* Dr. Guni Sharon

Light-Regularized-GANs for low light images

September 2019 - Jan 2021

- Added 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	<i>TX, USA</i>
2018	Deloitte Innovation Award , Ministry of Road and Railways, Smart India Hackathon	<i>Nagpur, India</i>
2018	Finalist (40/1980) , Philips Hackathon on Data Science	<i>Bangalore, India</i>
2013	Scholarship Holder , National Talent Search Exam (NTSE), awarded to top 1000 students in India	<i>India</i>

Professional Activities

2020	Reviewer , ICRA 2021
2021	Reviewer , IROS 2021
2022	Program Committee , AAAI 2023, AAAI workshop on multi-agent path finding
2023	Program Committee , NeurIPS 2023, AAAI 2023, NeurIPS workshop 2023
2023	Student Volunteer , AAMAS 2023