SUMUKH AITHAL K

Bengaluru, India

Email: sumukhaithal6@gmail.com   Website: sumukhaithal6.github.io

EDUCATION

PES University, Bengaluru   *2018 - 2022*
Bachelor of Technology   CGPA : 9.83/10
Department of Computer Science and Engineering   Top 1%
Relevant Coursework: Machine Intelligence, Topics in Deep Learning, Big Data,
Linear Algebra, Practical Reinforcement Learning, Advanced Algorithms

RESEARCH & WORK EXPERIENCE

Fujitsu Research India   Sept 2022 - Present
Applied Researcher II   *Bengaluru, India*

· Working on developing Graph Neural Networks that are scalable to large graphs.

Mila - Quebec AI Institute   May 2022 - Oct 2022
Research Intern   *Remote*
Advisor: Prof. Yoshua Bengio and Anirudh Goyal

· Worked on Self-Supervised Learning in close collaboration with Alex Lamb and Michael Mozer.

Video Analytics Lab, Indian Institute of Science   May 2020 - May 2022
Research Intern   *Bengaluru, India*
Advisor: Prof. R Venkatesh Babu

· Worked on Long-Tailed Learning (NeurIPS 2022), Domain Adaptation (ICML 2022) and Active Domain Adaptation (ICCV 2021).

SELECTED PUBLICATIONS   (* indicates equal contribution)

Leveraging the Third Dimension in Contrastive Learning
Sumukh K Aithal, Anirudh Goyal, Alex Lamb, Yoshua Bengio, Michael Mozer
*Accepted in **NeurIPS 2022 Workshop**: Self-Supervised Learning - Theory and Practice* [Paper]

Escaping Saddle Points for Effective Generalization on Class-Imbalanced Data
Harsh Rangwani*, **Sumukh K Aithal***, Mayank Mishra, R. Venkatesh Babu
*In Neural Information Processing Systems (**NeurIPS**) 2022.* [Paper] [Code]

A Closer Look at Smoothness in Domain Adversarial Training
Harsh Rangwani*, **Sumukh K Aithal***, Mayank Mishra, Arihant Jain, R. Venkatesh Babu
*In International Conference on Machine Learning (**ICML**) 2022.* [Paper] [Code]

Towards Domain Adversarial Methods to Mitigate Texture Bias
Dhruva Kashyap*, **Sumukh K Aithal***, Rakshith C*, Natarajan Subramanyam
*Accepted in Principles of Distribution Shift (PODS) **Workshop at ICML 2022** &*
Workshop on Spurious Correlations, Invariance, and Stability (ICML) 2022. [Paper]

S³VAADA: Submodular Subset Selection for Virtual Adversarial Active Domain Adaptation
Harsh Rangwani, Arihant Jain*, **Sumukh K Aithal***, R. Venkatesh Babu
*In International Conference on Computer Vision (**ICCV**) 2021.* [Project Page]

Robustness to Augmentations as a Generalization metric [Paper] [Video] [Code]
Sumukh Aithal K*, Dhruva Kashyap*, Natarajan Subramanyam
1st Runner Up in Predicting Generalization in Deep Learning, NeurIPS 2020 Competition Track

Methods and Analysis of The First Competition in Predicting Generalization of Deep Learning [Paper]
Yiding Jiang, Parth Natekar, Manik Sharma, **Sumukh K Aithal**, Dhruva Kashyap, Natarajan Subramanyam, Carlos Lassance, Daniel M. Roy, Gintare Karolina Dziugaite, Suriya Gunasekar, Isabelle Guyon, Pierre Foret, Scott Yak, Hossein Mobahi, Behnam Neyshabur, Samy Bengio
Proceedings of the NeurIPS 2020 Competition and Demonstration Track, PMLR 133:170-190

TECHNICAL SKILLS

Machine Learning	PyTorch, Keras, Tensorflow, OpenCV
Programming Languages & Tools	Python, C, C++

PROJECTS

Low Light Object Detection (Intel Advanced Driver Assistance Systems Project)
Performed Semantic Segmentation on the Indian Driving Dataset using custom trained DeepLabV3+ network. Worked on low light enhancement techniques to improve the model's accuracy.
Kaggle's ALASKA2 Image Steganalysis: Developed a Custom EfficientNet model to detect hidden data within images. Won a Silver medal for being in the *Top 3% (32/1095)* of all teams.
Imitation Learning on Enduro: Trained an agent to play the game of Enduro using Imitation Learning on the OpenAI gym environment. [Code].
Contributed to torchvision library: Added support for German Traffic Sign Recognition Benchmark (GTSRB) Dataset in torchvision (11k+ stars) library. [Link]
Generic B+ Tree: B+ Tree data structure for generic types. Supports all features of Standard Template Library (STL) container. [Code]

ACHIEVEMENTS

Kaggle Competition Expert: Ranked among top 2% of Kaggle participants.	[Profile]
CNR Rao Scholarship: Awarded to top 1% of the students at PES University.	2018-2022
India Police Hackathon: Among the top 8 out of 500 teams.	November 2019
Bounce Hack 1.0: Among the top 25 out of 2000 teams.	August 2019
Intel - PESU Student Contest: Awarded Best Completed Submission among 70 teams for the project on low light object detection.	May 2019
Pravega IBM Hackathon, Indian Institute of Science: Top 10 out of 100 teams.	January 2019
Karnataka Common Entrance Test: Rank 383 out of 0.2 million students.	April 2018

OTHER EXPERIENCE

- **Reviewer**: ICML 2022, NeurIPS 2022. (Sub-reviewer: ECCV 2022)

- Problem Setter for The AlCoding Club, the algorithms and coding club at PES University.

- Attended "Research Week with Google" 2022 organized by Google Research India.

- Attended Eastern European Machine Learning (EEML) Summer School in 2021.

- Attended CIFAR Deep Learning + Reinforcement Learning (DLRL) Summer School in 2021.

- Volunteered for the project at Mila: "COVI Canada: Peer-to-peer AI-based tracing of COVID-19".