Curriculum Vitae

Personal Information

Name Pavan Karjol
Date of Birth June 26, 1993

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Research Interests

Signal Processing and Machine Learning

Education

Jan 2022 – Present **Indian Institute of Science** *Bengaluru, Karnataka, India*
Ph.D student in the department of Electrical Communication Engineering.
Thesis title: Automatic symmetry discovery from the data using neural networks.
Grade: 9.2/10

Jul 2015 – Jul 2018 **Indian Institute of Science** *Bengaluru, Karnataka, India*
M.Sc (Research) in Electrical Engineering
Thesis: Speech Enhancement using Deep Mixture of Experts
Grade: 6.6/8

Sep 2010 – Jun 2014 **R V College of Engineering** *Bengaluru, Karnataka, India*
Bachelor of Engineering in Electronics and Communication
Grade: 8.7/10

Relevant Coursework

- Computational Methods of Optimization
- Signal Quantization and Compression
- Sparse Signal Processing and Compressed Sensing
- Topology
- Information Theory
- Online Prediction and Learning
- Algebra-I
- Stochastic Systems and Applications
- Speech Information Processing
- Digital Image Processing
- Reinforcement Learning
- Pattern Recognition and Neural Networks
- Computational Topology

Publications

1. Pavan Karjol, Ajay M, Prasanta Kumar Ghosh, "Speech enhancement using multiple deep neural networks", in 2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Canada.
2. Pavan Karjol, Prasanta Kumar Ghosh, "Broad phoneme class specific deep neural network-based speech enhancement", in 2018 IEEE International Conference on Signal Processing and Communication (SPCOM), Bengaluru, India.
3. Pavan Karjol, Prasanta Kumar Ghosh, "Speech enhancement using deep mixture of experts based on hard expectation maximization", Proc. of Interspeech 2018, Hyderabad, India.
4. Pavan Karjol, Rohan Kashyap and Prathosh A P, "Neural discovery of permutation subgroups", in Proceedings of the 26^{th} International Conference on Artificial Intelligence and Statistics (AISTATS) 2023, Valencia, Spain.
5. Pavan Karjol, Rohan Kashyap, Aditya Gopalan and Prathosh A P, "A Unified Framework for Discovering Discrete Symmetries", accepted in Proceedings of the 27^{th} International Conference on Artificial Intelligence and Statistics (AISTATS) 2024, Valencia, Spain..

Work Experience

Jul 2018 – Dec 2021 **Qualcomm Research and Development** *Bengaluru, India* – Machine Learning Framework Engineer

- Research and development of machine learning inference accelerator.
- Inference accelerator optimizations using graph neural networks and reinforcement learning.
- Study, train and analyse the performance of standard deep learning models in the following fields.
  - Recommendation systems
  - Object detection
  - Machine translation
- Optimization of object detection post-processing techniques such as non-max suppression.
- Open Source contributions to pytorch-glow community.
- Implementation of computer vision - machine learning operators such as ROIAlign and sparse convolutions.

Jul 2014 – Jul 2015 **Robert Bosch** *Bengaluru, India* – Software Engineer

- Development and debugging issues related to test integration system.

Skills and Achievements

- Prime Minister's Research Fellowship (PMRF) 2023 - 2025.
- Runner up for 'the best paper award' in signal processing category, SPCOM - 2018.
- **Additional courses**
  - Natural Language Processing (Coursera - Higher School of Economics, Moscow)
  - Fundamentals of Reinforcement Learning (Coursera - University of Alberta)
- **Programming Languages:** Python, C++, C, MatLab.
- **Deep Learning Frameworks:** Theano, Tensorflow, Pytorch, Keras.