Vishwas Sathish

Paul G. Allen School of Computer Science & Engineering
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Scholar
Github
Linkedin

Education

University of Washington, Seattle *2021 - Present*
PhD student in Computer Science and Engineering
Advisor: Rajesh P.N. Rao

PES University, Bangalore *2015 - 2019*
B.Tech in Computer Science and Engineering
Advisors: Rajiv Bajpai & Bhaskarjyoti Das

Kendriya Vidyalaya ASC Center, Bangalore *2012 - 2015*
Central Board of Secondary Education (CBSE) Class 10 & 12

Work Experience

Paul G. Allen School of Computer Science and Engineering (Neural Systems Lab) *Jan 2022 - Present*
Graduate Research Assistant | Tensorflow, Pytorch, Scikit-learn, OpenAI Gym, MuJoCo
Advisor: Rajesh P.N. Rao; Collaborator: Abhishek Gupta
First principles rethinking of AI compositionality and transfer. Developing scalable and feasible planning algorithms with Hierarchical RL, Hypernetworks and Neurally-Inspired Spatio-Temporal Abstractions.

Sensai Healthcare, Bangalore (7sugar) *July 2019 - June 2021*
Machine Learning Engineering Lead | Tensorflow, Numpy, Pandas, Javascript, asyncio
Applied deep learning techniques to solve problems in healthcare. Lead 3 projects spanning Vision, NLP and Forecasting. Worked on meal classification and calorie estimation algorithms for meal images using state-of-the-art vision models (Classified over 200 varieties of Indian meals). Secured TIDE 2.0 grant from the Ministry of Electronics and Information Technology, Govt. of India. Developed a novel and state-of-the-art forecasting algorithm for estimating future glucose values.

Morgan Stanley, Bangalore *Jan 2019 - July 2019*
Technology Analyst Intern | Java, Javascript, Spring Framework, Apache Camel, Apache Kafka
Worked on data routing and transformation using the Apache Camel framework. The pipeline was used by multiple Cloud and AI services within the organization. Developed a responsive website to search and query financial data.

Systems Biology Institute, Tokyo (Remote) (SBI Website) *July 2018 - Sept 2018*
Summer Research Intern | Python, Scikit-learn, Numpy, Pandas
Mentors: Vipul Gupta & Ayako Yachi
Proposed and built an Explainable Machine Learning Framework for drug classification algorithms. Visualized the effectiveness of ReLU as an activation function by approximating 2-D and 3-D functions.

Lam Research, Bangalore *June 2018 - August 2018*
Software Engineering Intern | Python, tkinter GUI
Worked on real-time process automation. Built a logging and visualization tool to help engineers address customer issues.

Academic Publications

1. **Active Predictive Coding: A Unifying Neural Model for Active Perception, Compositional Learning, and Hierarchical Planning**
   Rajesh Rao, Dimitrios C. Gklezakos, **Vishwas Sathish**.
   Published @ Neural Computation, 2024 (Paper)
   Presented @ The Annual Meeting of the Cognitive Science Society, 2023 (Poster)
2. **Applications of Optimal Stopping Algorithm for Social Graph-Based Recommendation**
   Sai Rohit, **Vishwas Sathish**, Tanya Mehrotra, Bhaskarjyoti Das
   2019 IEEE Students Conference on Engineering and Systems (Paper)
3. **Graph Embedding Based Hybrid Social Recommendation System**
   Vishwas Sathish, Tanya Mehrotra, Simran Dhinwa, Bhaskarjyoti Das
   Accepted for Oral at the 9th International Conference on Advances in Computing & Communications, 2019 (Paper)

Patents

1. **Apparatuses, Systems, and Methods for Active Predictive Coding Networks**, 2024 - Full US Patent filed (Serial Number: 18/408,173). Patent Pending.
   Rajesh Rao, Dimitrios C. Gklezakos, **Vishwas Sathish**

Projects and Technical Reports

1. **Spatio-Temporal Abstractions in Reinforcement Learning** (Paper).
   Vishwas Sathish, Courtnie Paschall.
   Technical Report, University of Washington, March 2022.
   Demonstrated Hierarchical RL techniques on partially observable grid-worlds to overcome challenges with sample efficiency and transfer in typical Reinforcement Learning algorithms.

2. **Examining LLM Cognition Through Puzzles and Optical Illusions**. (Paper)
   Vishwas Sathish, Aditya Kamath, Raphael Bechtold
   Technical Report, University of Washington, Dec 2022.
   Compared AI cognition against Humans, with edge case scenarios of optical illusions and logical puzzles. Specifically investigated Stable Diffusion and ChatGPT.

3. **nocode.ai - A Drag-and-Drop Platform to Explore Machine Learning Models** (Github)
   Varun Ranganathan, **Vishwas Sathish**, Sravani Mukopadhya, Vibha Satyanarayana, Vinayak Awanti
   Software Engineering, PES, University, 2018
   Built a drag-and-drop tool for Machine Learning Education. Users could drag various neural net layers like fully connected and CNNs, select their hyperparameters and study the models.

4. **Sentiment Analysis for Amazon Product Reviews with GloVE embeddings and LSTMs** (Github)
   Vishwas Sathish
   Machine Learning, PES, University, 2017
   Built an early sentiment analysis project with word embeddings and variants of recurrent neural networks as part of our ML project.

Professional Responsibilities

- **Student Area Chair** (Neural Computing Track): PhD Admissions, Paul G. Allen School of CSE *2021 - 2022*
- **Graduate Application Reader** (Neural Computing Track), Paul G. Allen School of CSE *2022 - 2023*
- **Graduate Teaching Assistantship** (UW CSE 421), Paul G. Allen School of CSE *2021*
- **PAMS Mentor** (Pre-Application Mentorship Service), Paul G. Allen School of CSE *2021 - 2022*
  Mentored 4 students from underrepresented communities towards their PhD Applications for Fall 2022.
- **Campaigning Team Head**, Epsilon Tech Fest, PES University, Bangalore *2016*

Skills

Languages: Python, C/C++, Java, JavaScript/TypeScript, HTML/CSS, LaTeX
Tools: Pytorch, Tensorflow, Numpy, OpenAI Gym, Sci-kit learn, Pandas, Docker, Slurm, Git, Bash
Courses: Advanced Data Structures & Algorithms, Machine Learning for Big Data, Deep Learning, Reinforcement Learning, Natural Language Understanding, Computer Vision, Computational Neuroscience

Awards and Honors

- **ACM ICPC**: Bagged Rank 1 at the Institution Level ACM-ICPC and Represented PES University at the Regional Contest in Chennai. Two-time top 10 rank in ICPC Pacific NW Qualifiers. *2018, 2022, 2023*
- 2 time recipient of **CNR Rao Metrit Scholarship** awarded by PES University for academic excellence. *2017, 2018*
- **SOF Science Olympiad**: Gold Medalist with a state rank of 14 and international rank 410. *2015*
- **Ranked 639** among 150,000 students appearing in the 2015 Karnataka CET Examinations. *2015*