Subhankar Ghosh

Curriculum Vitae

School of Electrical Engineering and Computer science — Washington State University
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Research Summary

My research is in the general area of robust and safe machine learning for high-stakes applications such as self-driving cars, healthcare, and surgical robots. My current research focuses on developing principled uncertainty quantification algorithms and performing theoretical analysis for a variety of problem settings including classification, regression, classification with imbalanced data, and robustness to adversarial perturbations of input examples.

Education

Washington State University, Pullman, WA — Spring 2022 – Present
Doctor of Philosophy in Computer Science
Advisor: Prof. Yan Yan and Prof. Jana Doppa
Research Topic: *Robust Machine learning and Decision-making for High-Stakes Applications*

Indian Institute of Science, Bangalore, India — 2018 – 2020
Master of Technology in Aerospace Engineering.

Maulana Abul Kalam Azad University of Technology, Kolkata, India — 2012 – 2016
Bachelor of Technology in Civil Engineering Department.

Professional Appointments

Research Intern, Neuropixel.AI, Bangalore India — Aug 2021 – Oct 2021
The current cataloging process on e-commerce websites is slow, expensive, inflexible, and not customer-oriented. Our goal was to build artificial neural network models that will automate the entire above process.

Research Assistant, Indian Institute of Science, Bangalore, India — August 2020 – July 2021
I worked on various applications of GANs (Generative Adversarial Networks) and VAEs (Variational Autoencoders) to handle the challenges of continual learning on a series of pattern recognition tasks.

Research Assistant, Washington State University, EECS — Jan 2022 – Present

Awards and Honors

Graduate Student Scholarship, IISc Bangalore — Aug 2018 – July 2020

All India Rank 497/154000 **(Top 0.33%)**
Graduate Aptitude Test in Engineering (GATE) Exam — 2018

Publications

Papers Under Review and Preprints

1. Shi Yuanjie*, Subhankar Ghosh*, Taha Belkhouja, Yan Yan, Jana Doppa, Brian Jones. **Conformal Prediction based Uncertainty Quantification for Imbalanced Data**. International Joint Conference on Artificial Intelligence (IJCAI), 2023. $*$ denotes equal contribution.

2. Subhankar Ghosh, Yuanjie Shie, Taha Belkhouja, Yan Yan, Jana Doppa, Brian Jones. **Probabilistically Robust Conformal Prediction**. International Conference on Uncertainty in Artificial Intelligence (UAI), 2023.

Conference Papers

1. Subhankar Ghosh*, Taha Belkhouja*, Yan Yan, and Jana Doppa **Improving Uncertainty Quantification of Deep Classifiers via Neighborhood Conformal Prediction: Novel Algorithm and Theoretical Analysis**. Proceedings of AAAI Conference on Artificial Intelligence (AAAI), 2023.
∗ denotes equal contribution.

2. Subhankar Ghosh. **Adversarial Training of Variational Auto-encoders for Continual Zero-shot Learning (A-CZSL)**. Proceedings of IEEE International Joint Conference on Neural Networks (IJCNN), 2021.**[paper]** **[code]** **[video]**

Workshop Papers

1. Subhankar Ghosh. **Dynamic VAEs with Generative Replay for Continual Zero-Shot Learning**. Proceedings of Computer Vision and Pattern Recognition (CVPR) Workshops, 2021. [[paper] [code]

References

- Prof. Yan Yan
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School of Electrical Engineering and Computer Science
Washington State University
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- Prof. Jana Doppa
Huie-Rogers Endowed Chair Associate Professor of Computer Science
School of Electrical Engineering and Computer Science
Washington State University
Email: jana.doppa@wsu.edu

Languages

- Bengali: Native
- Hindi: Bilingual
- English: Professional