

Aayush Mishra

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I work on making Artificial Intelligence systems robust, explainable and efficient.

Education

Johns Hopkins University	Jan 2022 - ongoing
<i>Ph.D. in Computer Science</i>	
<i>M.S.E. in Computer Science</i> – GPA: 4.0/4.0 (transcript 🔗)	completed Dec 2023
Indian Institute of Technology Mandi	Aug 2015 - Jun 2019
<i>B.Tech. in Computer Science and Engineering</i> – GPA: 8.88/10.0 (transcript 🔗)	
<i>with Minor in Management</i>	

Experience

Adobe	May 2024 - Aug 2024
<i>Research Intern</i> [Document Intelligence Lab]	
<ul style="list-style-type: none"> Developed EigenLoRA, a method to recycle trained LoRAs for parameter efficient training of new adaptors; and memory efficient inference of multiple adaptors, aimed at LLM/diffusion model use in edge devices. 	
Microsoft	Aug 2021 - Jan 2022
<i>Data & Applied Scientist</i> [Bing Shopping Team]	
<ul style="list-style-type: none"> Worked on query → product class mapping (~18k classes) to capture fine-grained user intent. Developed a relevance metric to improve ranking of sale offers. 	
Siemens	Jul 2019 - Aug 2021
<i>Research Engineer</i> [Automation]	
<ul style="list-style-type: none"> Developed a method that explains CNNs and helps compress them for deployment on edge devices. Used ProGAN to generate realistic traffic scenes for stress-testing object detection models (YOLO). Devised a procedural generation language based on GAN-Dissection to create images based on a description. Used RL to find edge-case scenarios where self-driving agents violate safety properties (in CARLA simulator). 	
<i>Research Intern</i> [Automation]	
<ul style="list-style-type: none"> Classification of Siemens Social Network posts using statistical NLP. Code reuse recommendation based on semantic search (Latent Semantic Analysis). 	Summer 2018 Winter 2017-2018

Publications/Research

<ul style="list-style-type: none"> <i>ODD: Overlap-aware Estimation of Model Performance under Distribution Shift</i> Aayush Mishra, Anqi Liu [under-review] 	2025
<ul style="list-style-type: none"> <i>EigenLoRA: Recycle trained Adapters for Resource Efficient Adaptation and Inference</i> Aayush Mishra*, Prakhar Kaushik*, et al. [pre-print 🔗] 	2024
<ul style="list-style-type: none"> <i>Do pretrained Transformers Learn In-Context by Gradient Descent?</i> Aayush Mishra*, Lingfeng Shen*, Daniel Khashabi [ICML (Oral) paper 🔗] 	2024
<ul style="list-style-type: none"> <i>Source-Free and Image-Only Unsupervised Domain Adaptation for Category Level Object Pose Estimation</i> Prakhar Kaushik, Aayush Mishra, et al. [ICLR paper 🔗] 	2024
<ul style="list-style-type: none"> <i>Repeated Environment Inference for Invariant Learning</i> Aayush Mishra, Anqi Liu [ICML SCIS workshop paper 🔗] 	2022
<ul style="list-style-type: none"> <i>VStegNET: Video Steganography Network using Spatio-Temporal features and Micro-Bottleneck</i> Aayush Mishra*, Suraj Kumar*, et al. [BMVC paper 🔗] 	2019

- *Generating Masterprints* 2019
Aayush Mishra [[bachelor's thesis](#)]

Projects

- CricScorer** [[IRWA course](#)] project 2023
 - Live Cricket scorer to store and retrieve data/stats at the highest resolution. [[report](#)]
- Stress testing Chain-of-Thought Prompting** [[SSL course](#)] project 2022
 - Tested the robustness of Chain-of-Thought prompting with noisy labels in GPT-3. [[report](#)]
- Surgical Tool Segmentation** [[DL course](#)] project 2022
 - Developed a novel data augmentation technique to improve tool segmentation performance. [[report](#)]

Teaching Experience

- Machine Learning* [JHU] Spring 2024
- Deep Learning and its Applications* [IIT Mandi] Spring 2019
- Artificial Intelligence* [IIT Mandi] Fall 2018

Designed homeworks/exams in all courses. Held tutorials and taught lectures on Self-Supervised Learning. [[link](#)]

Skills

- Python** ● ● ● ● ●
- C++** ● ● ● ● ○
- Machine Learning Toolkits (torch, transformers, etc.)** ● ● ● ● ●
- Data Engineering** ● ● ● ● ●
- Software Engineering** ● ● ● ● ○