Arpita Chowdhury

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Summary

My research focuses on **machine learning** and **computer vision**, with specific interests in **Transfer Learning, Multi-modal In-context Learning, Explainable AI**. Application-wise, currently, I am working on improving **Few-shot Video Object Segmentation** for applications in medical imaging and wildlife.

Education

- **The Ohio State University** — *2021 - 2026(Expected)*, Columbus, OH
  Ph.D. and M.S. in Computer Science and Engineering, Advisor: Prof. Wei-Lun (Harry) Chao.
- **University of Dhaka** — *2015 - 2019*, Dhaka, Bangladesh
  B.Sc. in Software Engineering

Publications

* denotes equal contributions and co-first authorship.

Conferences

[C.1] Zheda Mai*, **Arpita Chowdhury***, Ping Zhang*, Cheng-Hao Tu, Hong-You Chen, Vardaan Pahuja, Tanya Berger-Wolf, Song Gao, Charles Steward, Yu Su, Wei-Lun Chao. Fine-Tuning is Fine, if Calibrated.
In Proceedings of the Neural Information Processing Systems (NeurIPS) , 2024.

[C.2] Dipanjyoti Paul, **Arpita Chowdhury**, Xinqi Xiong, Feng-Ju Chang, David Carlyn, Samuel Stevens, Kaiya Provost, Anuj Karpatne, Bryan Carstens, Daniel Rubenstein, Charles Stewart, Tanya Berger-Wolf, Yu Su, Wei-Lun Chao, A Simple Interpretable Transformer for Fine-Grained Image Classification and Analysis.
In Proceedings of International Conference on Learning Representations (ICLR), 2024.

[C.3] Jihyung Kil, Zheda Mai, Justin Lee, Zihe Wang, Kerrie Cheng, Lemeng Wang, Ye Liu, **Arpita Chowdhury**, Wei-Lun Chao. CompBench: A Comparative Reasoning Benchmark for Multimodal LLMs.
In Proceedings of the Neural Information Processing Systems(NeurIPS), 2024

Industry Experience

- **Samsung Research and Development Institute** — *January 2019 - August 2019*, Dhaka, Bangladesh
  Backend Software Engineer, Full-time
  - Led the deployment, and maintenance of robust databases using Node.js and SQL, across multiple projects.
  - Partnered closely with front-end teams delivering demos to showcase project advancements.
- **Samsung Research and Development Institute** — *January 2018 - June 2018*, Dhaka, Bangladesh
  Intern Software Engineer, Full-time
  - Engineered a secure, robust SQL Server database engine with Node.js.
  - Developed an Android P2P chat app featuring movement-based gesture detection.
- **Softcell Solution Limited** — *August 2016 - October 2016*, Dhaka, Bangladesh
  Software Requirements Engineer, Part-time
  - Led weekly client meetings to ensure software requirements aligned with project goals.
  - Translated functional and data requirements into detailed data flow diagrams, class, and data models.

Research Employment

- **Computer Science & Engineering, The Ohio State University** — *May 2023 - Present*, Columbus, OH
  Graduate Research Assistant
  - The Ohio State University Medical Center
    * Developed 2D detection and segmentation models for pancreas neoplasia (medical imaging)
    * Developed Few-shot Video Object Segmentation models to enhance early detection of pancreatic cancer (medical imaging)
  - Imageomics Institute
    * Developed an algorithm to localize trait-specific regions in fine-grained classification.
    * Built self-supervised models for trait tracking in fine-grained species classification. (wildlife)
    * Created a scalable, interpretable trait discovery method using In-Context Learning.
    * Designed language-guided models for fine-grained wildlife segmentation. (wildlife)

Mentorship & Teaching

- **Main Instructor, The Ohio State University** *Semester: Fall 2023*
  - CSE 2221: Software I: Software Components
- **Graduate Teaching Assistant, The Ohio State University** *Semester: Summer 2023*
  - CSE 2221: Software I: Software Components
- **Head Graduate Teaching Assistant, The Ohio State University** *Semester: Spring 2023*
  - CSE 2111: Modeling and Problem Solving with Spreadsheets and Databases
- **Graduate Teaching Assistant, The Ohio State University** *Semester: Fall 2021*
  - CSE 3341: Principles of Programming Languages

Skills

- **Programming Languages:** Python, C++, JavaScript, Bash Script, R
- **Machine Learning Tools:** PyTorch, Huggingface, NumPy, Pandas, SciPy, scikit-learn
- **Other Tools & Technologies:** Git, Docker, SQL, Node.js, Android Development