SAVYA KHOSLA

savyak2@illinois.edu • +1 (217) 819-9469 • LinkedIn • GitHub • Google Scholar • Personal Website

EDUCATION

University of Illinois Urbana-Champaign   **Urbana, IL**
MS in Computer Science (CGPA: 4.0 / 4.0)   *Aug 2022 - May 2024*
- Graduate Teaching Assistant for CS 225: Data Structures and CS 445: Computational Photography

Delhi Technological University   **New Delhi, DL**
B.Tech. in Computer Engineering (CGPA: 9.40 / 10.0)   *Aug 2017 - July 2021*
- Received Research Excellence Award and INR 50,000 for noteworthy contributions to machine learning research

RESEARCH EXPERIENCE

Allen Institute of AI   **Seattle, WA**
Research Intern   *Oct 2022 - Dec 2023*
- Worked on a memory-augmented multimodal encoder for understanding videos ranging from a few seconds to tens of minutes
- Contributed to Unified-IO 2, an instruction-following model that can parse and generate multimodal data and perform 120+ tasks

National University of Singapore   **Remote**
Research Assistant (Guide: Prof. Kenji Kawaguchi)   *Apr 2022 - Aug 2022*
- Developed robust active learning algorithm for handling heteroskedastic noise, resulting in 10% accuracy boost over baselines
- Demonstrated 15% accuracy improvement in other state-of-the-art algorithms by incorporating a simple self-supervised approach

Mila - Quebec AI Institute   **Montreal, QC**
Research Intern (Guide: Prof. Yoshua Bengio)   *Apr 2021 - Nov 2021*
- Demonstrated catastrophic failure of uncertainty-based active learning algorithms by proposing 3 heteroskedastic data distributions
- Proposed adversarial training method that gives 48% reduction in error rate on clean data while preserving adversarial robustness

INDUSTRY EXPERIENCE

Google   **Bangalore, KA**
Software Engineer   *Aug 2021 - Mar 2022*
- Improved Google Search's web ranking infrastructure using deep learning for better multimodal document understanding
- Enhanced precision and recall in salient entity extraction from webpages by transitioning from traditional ML methods to LLMs

Google   **Bangalore, KA**
Software Engineering Intern   *May 2020 - Jul 2020*
- Initiated the development of MuRIL, a BERT-based multilingual language model for 17 Indian dialects
- Achieved 10.42% F1 improvement in sentiment analysis and 9.87% in named entity recognition for Indian languages

SELECTED PUBLICATIONS

1. Jiasen Lu, Christopher Clark, Sangho Lee, Zichen Zhang, **Savya Khosla**, Ryan Marten, Derek Hoiem, and Aniruddha Kembhavi. Unified-IO 2: Scaling Autoregressive Multimodal Models with Vision, Language, Audio, and Action. *Under review*, 2023.

2. **Savya Khosla**, Zhen Zhu, and Yifie He. Survey on Memory-Augmented Neural Networks: Cognitive Insights to AI Applications. *arXiv:2312.06141 [cs.AI]*, 2023

3. **Savya Khosla**, Chew Kin Whye, Jordan T. Ash, Cyril Zhang, Kenji Kawaguchi, and Alex Lamb. Neural active learning on heteroskedastic distributions. *26th European Conference on Artificial Intelligence (ECAI)*, 372:1248-1255, 2023.

4. Alex Lamb, Vikas Verma, Kenji Kawaguchi, Alexander Matyasko, **Savya Khosla**, Juho Kannala, and Yoshua Bengio. Interpolated adversarial training: Achieving robust neural networks without sacrificing too much accuracy. *Neural Networks*, 154:218–233, 2022.

5. **Savya Khosla**, Alex Lamb, Jordan Ash, Cyril Zhang, and Kenji Kawaguchi. Catastrophic failures of neural active learning on heteroskedastic distributions. In *NeurIPS 2021 Workshop on Distribution Shifts: Connecting Methods and Applications*, 2021.

6. Simran Khanuja, Diksha Bansal, Sarvesh Mehtani, **Savya Khosla**, Atreyee Dey, Balaji Gopalan, Dilip Kumar Margam, Pooja Aggarwal, Rajiv Teja Nagipogu, Shachi Dave, Shruti Gupta, Subhash Chandra Bose Gali, Vish Subramanian, and Partha Talukdar. MuRIL: Multilingual Representations for Indian Languages. *arXiv:2103.10730 [cs.CL]*, 2021.

PROJECTS & SKILLS

Selected projects: Occluded Facial Expression Recognition, Image Captioning, Text-to-Image, Machine Learning Algorithms

Programming languages/frameworks: Python, C++, TensorFlow, Keras, PyTorch, JAX, Flax, Git, Shell Scripting, Javascript, Gradio

Technical skills: Data Structures, Algorithms, Object-Oriented Programming, ML, CV, NLP, Multimodal Learning