

Sahil Khose

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EDUCATION

Georgia Institute of Technology, Atlanta, USA <i>Ph.D. in Computer Science</i> <i>Advisor: Prof. Judy Hoffman</i>	Aug 2024
Georgia Institute of Technology, Atlanta, USA <i>M.S. in Computer Science with ML specialization</i> <i>Thesis: Improving Real-World Aerial Scene Understanding with a Synthetic Dataset [ECCV 2024]</i> <i>Committee: Prof. Judy Hoffman (Advisor), Prof. Zsolt Kira, and Prof. Humphrey Shi</i>	Aug 2022 – May 2024 GPA: 4.0/4.0
Manipal Institute of Technology, Manipal, India <i>B.Tech. in Computer and Communication Engineering (Minor: Big Data GPA: 10.0)</i>	2018 – 2022 CGPA: 8.56/10

RESEARCH EXPERIENCE

Georgia Institute of Technology, Atlanta, USA <i>Graduate Research Assistant at Hoffman AI Lab</i> <ul style="list-style-type: none">Exploring generalist multi-modal large language model systems to improve adaptability and transfer to novel modalities.Led the generation of a synthetic aerial imagery dataset with varying weather, daytime, height, and pitch variations using the CARLA simulator and studying the effects of domain shift due to varying semantic conditions. [C4]	Jan 2023 – Present <i>Advisor – Prof. Judy Hoffman</i>
Georgia Institute of Technology, Atlanta, USA <i>Graduate Research Assistant at Neural Data Science Lab (NerDS)</i> <ul style="list-style-type: none">Led the development of a distribution-aware latent augmentation technique to address challenges in DG. [C3]The technique demonstrated significant performance in domain generalization (DG) and long-tailed recognition tasks.	Jan 2023 – May 2023 <i>Advisor – Prof. Eva Dyer</i>
Indian Institute of Science, Bangalore, India <i>AI Research Assistant at Artificial Intelligence and Robotics Lab</i> <ul style="list-style-type: none">Innovated solutions for various problems in the Continual Generalized Zero-Shot Learning (CGZSL) setting.Bachelor's Thesis: Zero-Shot Domain Generalization: Unseen Classes in Unseen Domains.	Jul 2021 – Jul 2022 <i>Advisors – Prof. S. Sundaram & Dr. Chandan Gautam</i>
Manipal Institute of Technology, Manipal, India <i>Medical AI Research Assistant</i> <ul style="list-style-type: none">Developed a medical diagnosis system for fovea segmentation using semi-supervised segmentation. [C2]Designed a macular degeneration classification system with interpretability for ophthalmology diagnosis. [C1]	Apr 2021 – Oct 2022 <i>Advisor – Prof. Harish Kumar JR</i>
Project MANAS – AI Robotics Research Team, MIT, Manipal, India <i>AI Perception Developer</i> GitLab Website <ul style="list-style-type: none">Achieved World Rank 1 at the 27th Intelligent Ground Vehicle Competition (IGVC 2019).Won the Mahindra \$1Million Challenge (top 13 out of 153 teams in India).Implemented Lane Detection, Speed Bump Detection, Driving Imitation System, Depth Map Generation using multiple cameras and LiDAR input using Deep Learning for our UGV and the self-driving car.	Feb 2019 – May 2021

CONFERENCE PAPERS

C4. SkyScenes: A Synthetic Dataset for Aerial Scene Understanding <i>European Conference on Computer Vision (ECCV) 2024</i> Sahil Khose* , Anisha Pal*, Aayushi Agarwal*, Deepanshi*, Prithvijit Chattopadhyay, Judy Hoffman	Paper Dataset GitHub
C3. WACV 2024: LatentDR: Improving Model Generalization Through Sample-Aware Latent Degradation & Restoration <i>Winter Conference on Applications of Computer Vision (WACV) 2024</i> Ran Liu, Sahil Khose , Jingyun Xiao, Lakshmi Sathidevi, Keerthan Ramnath, Zsolt Kira, Eva L. Dyer	GitHub Paper
C2. INDICON 2023: Explainable Classification of Macular Degeneration Using Deep Learning Sahil Khose* , Ankita Ghosh*, Yogish Kamath, Neetha Kuzhuppilly, Harish Kumar J. R.	Paper
C1. INDICON 2023: Fovea Segmentation Using Semi-Supervised Learning Ankita Ghosh*, Sahil Khose* , Yogish Kamath, Neetha Kuzhuppilly, Harish Kumar J. R.	Paper

WORKSHOP PAPERS

- W7. NeurIPS 2022:** Continual VQA for Disaster Response Systems
[Poster] Tackling Climate Change with ML at NeurIPS 2022
Aditya Kane*, V Manushree*, **Sahil Khose*** Sep 2022
[GitHub](#) | [Paper](#)
- W6. ICML 2022:** An Efficient Modern Baseline for FloodNet VQA
[Best Paper Award] New in ML at ICML 2022
Aditya Kane*, **Sahil Khose*** May 2022
[GitHub](#) | [Paper](#)
- W5. ACL 2022:** Transformer based ensemble for emotion detection
[Oral] WASSA at ACL 2022
Aditya Kane, Shantanu Patankar, **Sahil Khose**, Neeraja Kirtane Mar 2022
[GitHub](#) | [Paper](#)
- W4. NeurIPS 2021:** A Studious Approach to Semi-Supervised Learning
[Poster] ICBINB at NeurIPS 2021
Sahil Khose*, Shruti Jain*, V Manushree* Sep 2021
[GitHub](#) | [Paper](#)
- W3. NeurIPS 2021:** XCI-Sketch
[Oral] New in ML, [Paper] ML4CD, [Paper] CtrlGen, [Poster] DGM at NeurIPS 2021
V Manushree, S Saxena, P Chowdhury, M Varma, H Rathod, Ankita Ghosh*, **Sahil Khose*** Aug 2021
[GitHub](#) | [Paper](#)
- W2. NeurIPS 2021:** Semi-Supervised Classification & Segmentation on High Resolution Aerial Images
[Spotlight Paper] Tackling Climate Change with ML at NeurIPS 2021
Sahil Khose, Abhiraj Tiwari, Ankita Ghosh May 2021
[GitHub](#) | [Paper](#)
- W1. NAACL 2021:** BERT Transformers in Extraction of Health Information from Social Media
[Top Performer Award] Published in proceedings of NAACL 2021 at SMM4H workshop
S Ramesh*, A Tiwari*, P Choubey*, S Kashyap*, **Sahil Khose***, K Lakara*, N Singh*, Ujjwal Verma Apr 2021
[GitHub](#) | [Paper](#)

SELECTED PROJECTS

- 1. Domain Generalization: Tackling Diversity and Correlation Shifts** [YouTube](#) | [GitHub](#) Fall 2022
- **Course Project:** CS 7647 Machine Learning with Limited Supervision [Fall 2022] (Prof. **Judy Hoffman**)
 - Studied two problems we encounter with change in data distribution – **Diversity Shift** and **Correlation Shift**.
 - Combined **RSC** and **VREx** to be robust to both the data shifts. Performed best on three datasets and competitive on others.
- 2. Zero-Shot Domain Generalization: Unseen Classes in Unseen Domains** Jan 2022 - Apr 2022
- **Bachelor's Thesis:** Developed a **CLIP** based **CNZSL** architecture to address **domain generalized zero-shot learning**.
 - Evaluated on **six different unseen domains** under **three different zero-shot** settings and the proposed solution outperforms state-of-the-art models in this problem setting in most of the domains on the **DomainNet dataset**.

TEACHING EXPERIENCE

- Graduate Teaching Assistant: CS 7647 Machine Learning with Limited Supervision** [Website](#) Fall 2023
- **Instructor: Prof. Judy Hoffman** | Mentored 50 students to apply and advance state-of-the-art techniques for learning from visual data with limited human supervision, overseeing 12 research projects.

PROFESSIONAL SERVICES

- Reviewer:** 1. [ECCV 2024](#) | 2. [NeurIPS-W 2023: ICBINB and DGM4H](#) | 3. [ICCV-W 2023: WiCV](#) | 4. [NAACL-W 2021: SMM4H](#)
Volunteer: [NeurIPS 2022](#): In-person conference at New Orleans.

EXTRACURRICULAR

- YouTube Channel:** Conducts **explanations** on cutting-edge research papers in the field of AI. **20+ videos and 11000+ views**.
FruitPunch AI – AI Head : Established the first international chapter of the non-profit org **headquartered in Europe**.
Research Society Manipal – AI Mentor : **Mentored** several students to pursue research in the field of Deep Learning.
Medium | **WordPress** | **Website Feed**: Documented my BTech college journey with a series of tech and non-tech **blog posts**.