Aishik Konwer *Curriculum vitae*

CONTACT

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EDUCATION

Stony Brook University, New York (USA) 2019 - present
PhD, Computer Science GPA: 3.92/4
Advisor: Dr. Prateek Prasanna

Institute of Engineering & Management, Kolkata (India) 2013 - 2017
BTech, Electronics & Communication Engineering GPA: 8.89/10

RESEARCH INTERESTS

Vision language models (VLM), Multimodal representation learning, Generative modeling (GAN, stable diffusion), Meta-learning, LLM, Few-shot learning, Domain generalization, Image-to-image translation

INDUSTRY EXPERIENCE

GE Healthcare - AI Scientist Intern May 2024 - Aug. 2024
Working with Foundational AI team
Topic: Visual grounding and human-in-the-loop feedback for semi-supervised organ/tumor segmentation
Mentor: Danica Xiao

SRI International - Deep Learning Research Intern May 2023 - Aug. 2023
Worked with Scene Understanding and Navigation team
Topic: Remote sensing image segmentation from HS, LiDAR, and RGB data via masked pre-training
Mentor: Han-Pang Chiu

Roche Diagnostics - ML Research Intern May 2022 - Aug. 2022
Worked with Computational Science Pathology team
Topic: Annotation-efficient learning algorithm for cell detection and classification in gigapixel images
Mentor: Christoph Guetter

Cognizant - Programmer Analyst Dec. 2017 - Jul. 2019
Worked with Data warehouse team
Topic: Writing shell scripts, SQL, and Informatica transformations for data migration
Mentor: Kanchan Patra

ONGOING PROJECTS

- **Finetuning Llama 2 LLM-based chatbot with LoRA adapters for caption generation**
- **Prompting CLIP and LLM-based VQA models for enriched supervision**
- **Using open pretrained LLMs (OPT-175B) for medical scan path prediction**
- **Histopathology image synthesis via diffusion autoencoders**

PUBLICATIONS

- **A Konwer** et al., "Enhancing SAM with efficient prompting and preference optimization for semi-supervised medical image segmentation", submitted to **CVPR** 2025.
- **A Konwer** et al., "MetaStain: Stain-generalizable Meta-learning for Cell Segmentation and Classification with Limited Exemplars", **MICCAI** 2024.
- **A Konwer** et al., "Enhancing Modality-Agnostic Representations via Meta-Learning for Brain Tumor Segmentation", **ICCV** 2023. **[PDF]**
- **A Konwer** et al., "MagNET: Modality-Agnostic Network for Brain Tumor Segmentation and Characterization with Missing Modalities", **MICCAIw** 2023.
- **A Konwer** et al., "Temporal Context Matters: Enhancing Single Image Prediction with Disease Progression Representations", **CVPR** 2022. **[PDF][Oral]**
- **A Konwer** et al., "Lesion segmentation and genomic character-ization of brain cancer patients from incomplete MR sequences", *Radiology Society of North America* **(RSNA)** 2022. **[Oral]**
- **A Konwer** et al., "Clinical outcome prediction in COVID-19 using self-supervised vision transformer representations", **SPIE Medical Imaging** 2022. **[Oral]**
- **A Konwer** et al., "Attention-Based Multi-scale Gated Recurrent Encoder with Novel Correlation Loss for COVID-19 Progression Predictions", **MICCAI** 2021. **[Early Accept]** **[PDF]**

- **A Konwer** et al.,"Predicting COVID-19 Lung Infiltrate Progression on Chest Radiographs Using Spatio-temporal LSTM based Encoder-Decoder Network", **MIDL** 2021. [**PDF**]
- **A Konwer** et al., "Staff line Removal using Generative Adversarial Networks", **ICPR** 2018. [**PDF**][**Oral**]
- AK Bhunia*, **A Konwer***, A Bhowmick, AK Bhunia, PP Roy, U Pal, "Script Identification in Natural Scene Image and Video Frame using Attention based Convolutional-LSTM Network", **Pattern Recognition** 2019. [**PDF**]
- S Nag, AK Bhunia, **A Konwer**, AK Bhunia, PP Roy, "Facial Micro-expression Spotting and Recognition Using Time Contrasted Feature with Visual Memory", **ICASSP** 2019. [**PDF**]
- AK Bhunia, AK Bhunia, P Banerjee, **A Konwer**, A Bhowmick, PP Roy, U Pal, "Word Level Font-to-Font Image Translation using Convolutional Recurrent Generative Adversarial Networks", **ICPR** 2018. [**PDF**]

Pre-PhD Research Experience

IIT Roorkee - Research Intern 2017 - 2018
Worked with Parimal Lab
Topic: Script identification and staff line removal from music score images
Mentor: Partha Pratim Roy

Indian Statistical Institute - Research Intern 2016 - 2017
Worked with CVPR unit
Topic: Handwritten text segmentation, GVF-based license character segmentation
Mentor: Umapada Pal

Invited Talks

"Towards Data-Efficient Representation Learning in Medical Vision" Oct. 2023
MedAI group, Stanford University
Host: Daniel Rubin

"Meta-Learning in Digital Pathology" Nov. 2022
Roche Advanced Analytics Network
Host: Qinle Ba, Julie Ta

"Modality-Agnostic Network for Brain Tumor Characterization with Missing Modalities" Oct. 2022
Graduate Research Day, Stony Brook University
Host: Computer Science Dept.

"Predicting Disease Trajectory on Medical Imaging" May 2022
Siemens Healthineers
Host: Halid Yerebakan

"How to utilize limited datasets? Can temporal imaging help" Oct. 2021
Applied Maths and Stats Dept., Stony Brook University
Host: Wei Zhu

Awards

- **Travel grant**, Computer Vision and Pattern Recognition (CVPR), 2022
- **Conference support**, SPIE Medical Imaging, 2022
- **Professional Development Fund**, SUNY Research Foundation, 2021
- Prestigious **PhD Chairman Fellowship**, Stony Brook University, 2019
- NPTEL Elite Certification in Medical Image Analysis, IIT Kharagpur, 2017
- 1st Prize in Engineering Model-making Competition, NEN 2015

Reviewer

CVPR, ICCV, NeurIPS, ECCV, MICCAI, BMVC, Medical Image Analysis, MIDL, ISBI

Teaching

- CSE 305 Principles of Database Systems (Fall 2019, Spring 2020)
- CSE 512 Machine Learning (Summer 2020)

Coursework

Computer Vision, Machine Learning, Data Science, Visualization, Human Computer Interaction.

Skills

Python, C++, Matlab, SQL, Pytorch, Tensorflow, Numpy, OpenCV, LaTeX