

SAARTHAK KAPSE

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Education

Stony Brook University, NY, USA

Feb, 2021 – Present

Doctor of Philosophy, Biomedical Informatics

Advised by: Prateek Prasanna, Dimitris Samaras, Joel Saltz

Collaborators: Srijan Das (Assistant Professor at UNC Charlotte, USA), Pushpak Pati (Senior Data Scientist at JNJ, Switzerland), Rajarsi Gupta

(Assistant Professor at Stony Brook University, USA), Chao Chen (Associate Professor at Stony Brook University, USA), Maria Vakalopoulou (Assistant

Professor at CentraleSupélec, University Paris Saclay, France)

Indian Institute of Technology, Bombay, India

Aug, 2016 – Dec, 2020

Bachelor of Technology, Electrical Engineering

Publications (selected)

- SI-MIL: Taming Deep MIL for Self-Interpretability in Gigapixel Histopathology** *CVPR 2024*
Saarthak Kapse*, P. Pati*, S. Das, J. Zhang, C. Chen, M. Vakalopoulou, J. Saltz, D. Samaras, R. Gupta, P. Prasanna
- Learned representation-guided diffusion models for large-image generation** *CVPR 2024*
A. Graikos*, S. Yellapragada*, M. Le, Saarthak Kapse, P. Prasanna, J. Saltz, D. Samaras
- Attention de-sparsification matters: Inducing diversity in pathology representation learning** *MedIA 2023*
Saarthak Kapse, S. Das, J. Zhang, R. Gupta, J. Saltz, D. Samaras, P. Prasanna
- Prompt-MIL: Boosting Multi-Instance Learning Schemes via Task-specific Prompt Tuning** *MICCAI 2023*
J. Zhang, Saarthak Kapse, K. Ma, P. Prasanna, J. Saltz, M. Vakalopoulou, D. Samaras
- ViT-DAE: Transformer-driven Diffusion Autoencoder for Histopathology Image Analysis** *MICCAI-W 2023*
X. Xu, Saarthak Kapse, R. Gupta, P. Prasanna (workshop)
- SAM-Path: A Segment Anything Model for Semantic Segmentation in Digital Pathology** *MICCAI-W 2023*
J. Zhang, K. Ma, Saarthak Kapse, J. Saltz, M. Vakalopoulou, P. Prasanna, D. Samaras (workshop)
- Precise location matching improves dense contrastive learning in digital pathology** *IPMI 2023*
Saarthak Kapse*, J. Zhang*, K. Ma, P. Prasanna, M. Vakalopoulou, J. Saltz, D. Samaras
- CD-Net: Histopathology Representation Learning Using Context-Detail Transformer Network** *ISBI 2023*
Saarthak Kapse, S. Das, P. Prateek
- Subtype-Specific Spatial Descriptors of Tumor-Immune Microenvironment are Prognostic of Survival in Lung Adenocarcinoma** *ISBI, 2022*
Saarthak Kapse, L. Healy, R. Moffitt, R. Gupta, P. Prasanna
- Predicting mechanical ventilation and mortality in COVID-19 using radiomics and deep learning on chest radiographs: a multi-institutional study** *Diagnostics, 2021*
Saarthak Kapse*, J. Bae*, et al.

Experience

Graduate Researcher | IMAGINE Lab, Stony Brook University, NY, USA

Feb, 2021 – Present

- Exploring Efficient Pan-Cancer Foundational Models; Vision-Language Models for Concept-Grounded methods (ongoing)
- Self-Interpretability in gigapixel Histopathology Using Handcrafted Features Grounded Model (CVPR'24)
- Domain-Driven Self-Supervised Learning in Computational Pathology (MedIA'23; IPMI'23; ISBI'23)
- Generative Modeling Encompassing Large-Image Generation and Synthetic Data Augmentation Using Diffusion Models (CVPR'24, MICCAI-W'23)

Undergraduate Researcher | Indian Institute of Technology, Bombay, India

Jan, 2020 – Dec, 2020

Gene Mutation Prediction from non-small cell lung cancer histopathology slides advised by Dr. Amit Sethi

Research Intern | Philips Innovation Campus, Bangalore, India

May, 2019 – Jul, 2019

Liver Lesion Segmentation from CT Scans using 3D Volumetric Deep Learning Approach advised by Dr. M.S Dinesh

Technical Skills

Technologies: Computer Vision, Deep Learning, Self-Supervised learning, Generative Modelling, Vision-Language Model

Domains: Computational Pathology, Medical Imaging (MRI, CT, X-Ray)

Languages & Frameworks: Python, PyTorch, TensorFlow, Hugging Face, QuPath, MLflow, L^AT_EX