

# SAARTHAK KAPSE

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## Education

**Stony Brook University, NY**

Feb, 2021 – Present

*Doctor of Philosophy, Biomedical Informatics*

Advised by: Prateek Prasanna, Dimitris Samaras, Joel Saltz

Collaborators: Srijan Das, Pushpak Pati, Rajarsi Gupta, Chao Chen, Maria Vakalopoulou

**Indian Institute of Technology, Bombay, India**

Aug, 2016 – Dec, 2020

*Bachelor of Technology, Electrical Engineering*

## Publications

- SI-MIL: Taming Deep MIL for Self-Interpretability in Gigapixel Histopathology** *Under Review (CVPR)*  
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** *Under Review (CVPR)*  
A. Graikos\*, S. Yellapragada\*, M. Le, Saarthak Kapse, P. Prasanna, J. Saltz, D. Samaras
- Attention de-sparsification matters: Inducing diversity in pathology representation learning** *Under Review (MedIA)*  
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 (workshop)*  
X. Xu, Saarthak Kapse, R. Gupta, P. Prasanna
- SAM-Path: A Segment Anything Model for Semantic Segmentation in Digital Pathology** *MICCAI-W 2023 (workshop)*  
J. Zhang, K. Ma, Saarthak Kapse, J. Saltz, M. Vakalopoulou, P. Prasanna, D. Samaras
- 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** *MDPI, 2021*  
Saarthak Kapse\*, J. Bae\*, et al.

## Experience

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

Feb, 2021 – Present

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

**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

## Academic & Technical Details

**Research Experience:** Computational Pathology, Medical Imaging, Self-Supervised learning, Concept based learning

**Courses:** Computer Vision, Deep Learning, Machine Learning, Reinforcement Learning, Automatic Speech Recognition

**Languages & Frameworks:** Python, PyTorch, TensorFlow, Hugging Face, Openslide, QuPath, Palantir, L<sup>A</sup>T<sub>E</sub>X