

SAARTHAK KAPSE

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Education

Stony Brook University, Stony Brook, 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

1. **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
2. **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
3. **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
4. **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
5. **ViT-DAE: Transformer-driven Diffusion Autoencoder for Histopathology Image Analysis** *MICCAI(WS) 2023*
X. Xu, Saarthak Kapse, R. Gupta, P. Prasanna
6. **SAM-Path: A Segment Anything Model for Semantic Segmentation in Digital Pathology** *MICCAI(WS) 2023*
J. Zhang, K. Ma, Saarthak Kapse, J. Saltz, M. Vakalopoulou, P. Prasanna, D. Samaras
7. **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
8. **CD-Net: Histopathology Representation Learning Using Context-Detail Transformer Network** *ISBI 2023*
Saarthak Kapse, S. Das, P. Prateek
9. **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

Experience

Graduate Researcher | IMAGINE Lab, Stony Brook University, NY

Feb, 2021 – Present

- Exploring Efficient Pan-Cancer Foundational Models; Multimodal LLMs for Concept-Grounded Models (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 (MICCAIW'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^AT_EX