Saumya Gupta

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Education

Stony Brook University, Stony Brook, NY, USA Aug 2021 – Present
Ph.D. in Computer Science, GPA: 4.00/4.00

National Institute of Technology Karnataka (NITK) Surathkal, India Aug 2014 – May 2018
B.Tech. in Computer Science and Engineering, GPA: 9.49/10.00

Experience

Graduate Research Assistant | Stony Brook University, NY, USA May 2022 – Present
- Topology-preserving diffusion models for generating synthetic data (ongoing) | Python, PyTorch
- Enhanced image segmentation by proposing structural uncertainty using topology and graph neural networks (NeurIPS'23). Integrating into MONAI's active learning pipeline to optimize annotation | Python, PyTorch, C++
- Topology-aware loss function for multi-class image segmentation (ECCV'22 Oral) | Python, PyTorch

Graduate Teaching Assistant | Stony Brook University, NY, USA Aug 2021 – May 2022
- For the CSE303 course Theory of Computation, conducted office hours, curated questions, and graded homework

Senior Software Engineer | Samsung R&D Institute, Bangalore, India July 2018 – June 2021
- Developed a lightweight deep learning model to replace the ISP pipeline, optimizing denoising across scenes/ISO levels (commercialized in Samsung Galaxy S21) | Python, PyTorch, Tensorflow, TensorFlow Lite
- Super-resolution of 3D Ultrasound ovarian volumes upto 2x (SPIE'21 Oral) | Python, PyTorch
- Introduced security measures such as encryption and anonymization/deanonymization of PHI data in Samsung's DICOM platform to ensure HIPAA compliance | C++, PostgreSQL, OpenSSL

Undergraduate Research Assistant | NITK Surathkal, India July 2017 – May 2018
- Minimized the time to detect faults in Software Defined Networks (SDNs) (silent blackhole detection) | C++

Intern | Samsung R&D Institute, Bangalore, India May 2017 – July 2017
- Rendered a tile-based vertical scrolling approach in Vulkan to minimize the load on GPU | C, C++

Selected Publications

Topology-aware Uncertainty for Image Segmentation
***Saumya Gupta**, Yikai Zhang, Xiaoling Hu, Prateek Prasanna, Chao Chen* NeurIPS 2023

Learning Topological Interactions for Multi-Class Medical Image Segmentation
***Saumya Gupta**, et al.* ECCV 2022 (Oral)

Ovarian Assessment Using Deep Learning Based 3D Ultrasound Super Resolution
***Saumya Gupta**, Venkata Suryanarayana K., Srinivas R. Kudavelly* SPIE 2021 (Oral)

Currency Recognition System Using Image Processing
*Vedasamhitha Abburu, **Saumya Gupta**, S. R. Rimitha, Manjunath Mulimani, Shashidhar G. Koolagudi* IC3 2017

Professional Activities

Conference/Journal Peer Reviewer: NeurIPS, ICML, ISBI, DALI, TNNLS 2023

Conference Tutorial Organizer: MICCAI 2023

Instructor/Teaching Assistant: Biomedical Informatics Bootcamp, Stony Brook University 2023

Skills

Languages, Tools, Frameworks: Python, C, C++, Java, PostgreSQL, PyTorch, Keras, TensorFlow, OpenCV, MATLAB, Visual Studio, Git, LaTeX, Android Studio, Sony Vegas, Adobe After Effects, Photoshop

Domain Experience: Computer Vision, Machine Learning, Topological Data Analysis, Medical Imaging

Selected Awards

Accepted to CRA-WP Grad Cohort for Women 2023
ECCV Travel Award 2022
Stony Brook University Summer Fellowship 2022
Samsung Spot Award 2020, 2019
Samsung Quality Champions Annual Award 2018
Samsung Professional Level Software Certification 2018