Ashish Sinha

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Research Interests →
Computer Vision (2D/3D), Machine (Deep) Learning
Specifically, Representation Learning, Generative Modeling, Scene Understanding
With applications in Medical Imaging and Life Sciences.

Education

2021 – 2024 **Simon Fraser University (SFU)**,
MSc (Thesis), Computer Science,
Advisor: Prof. Ghassan Hamarneh

2016 – 2020 **Indian Institute of Technology (IIT) Roorkee**,
B. Tech, Materials Science,
Advisor: Prof. K.S. Suresh

Publications (Google Scholar)

⋆ : Equal Contribution and First Authorship | IF: Impact Factor

2025 | CoRL ***UnPose*: Uncertainty-Guided Diffusion Priors for Zero-Shot Pose Estimation**
Conference on Robot Learning (CoRL)
Z. Jiang, **A. Sinha**, T. Cao, Y. Ren, B. Liu, B. Xu

2024 | MICCAI ***TrIND*: Representing Anatomical Trees by Denoising Diffusion of Implicit Neural Fields**
International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
A. Sinha, G. Hamarneh

2024 | MedIA ***DermSynth3D*: Synthesis of *in-the-wild* Annotated Dermatology Images**
Medical Image Analysis (MedIA) | IF: 13.8
A. Sinha⋆, J. Kawahara⋆, A. Pakzad⋆, K. Abhishek, M. Rutheven, E. Ghorbel, A. Kacem, D. Aouada, G. Hamarneh

2023 | CVPR ***MEnsA*: Mixup Ensemble Average for Multi Target Domain Adaptation on Point Clouds**
CVPR Workshop on Learning with Limited Data
A. Sinha, J. Choi

2020 | JBHI **Multi-Scale Self-Guided Attention Networks for Medical Image Segmentation**
Journal of Biomedical and Health Informatics (JBHI) | IF: 7.7 | Citations: 600+
A. Sinha, J. Dolz

2019 | NeuIPS ***GAGAN*: CT Reconstruction from Biplanar DRRs using GAN with Attention**
Medical Imaging Meets NeurIPS Workshop
A. Sinha, Y. Sugawara, Y. Hirano

2020 | ICPR **Deep Learning Based Dimple Segmentation for Quantitative Fractography**
Industrial Machine Learning Workshop. Spotlight
A. Sinha, K.S. Suresh

Work Experience

July 2024– Present **Researcher**, Noah's Ark Lab, Huawei Technologies, Toronto, Canada,
Advisor: Dr. Binbin Xu

- Trained multi-modal foundation models for detection of small tableware objects, achieving improvement of 32% in mAP
- Developed a near real-time zero-shot 6DOF pose estimation method using 2D/3D foundation models
- Co-developed an uncertainty-guided object reconstruction and 6DOF pose estimation method using 3D diffusion models. Accepted in CORL 2025
- Trained/Finetuned vision language action models for robotic manipulation in simulation and deployed on real robots (AgileX Piper and Franka)

Nov 2021– Jun 2024 **Graduate Research Assistant**, Medical Image Analysis Lab, SFU, Vancouver, Canada,
Advisor: Prof. Ghassan Hamarneh

- Worked on representation learning (neural fields) and generative modeling of anatomical trees using diffusion models. Accepted in MICCAI 2024
- Developed a differentiable rendering framework to generate large-scale synthetic clinical data. Accepted in MedIA
- Worked on developing an ethics framework for medical image synthesis. Currently under review
- Developed a training-free method for scalable dermatological data synthesis using Stable Diffusion and ControlNet. Currently under review
- Worked on single view 3D reconstruction of vascular structures using implicit neural representations (INRs)

Dec 2020– Aug 2021 **Research Intern**, GIST Vision Lab, South Korea (Remote),
Advisor: Prof. Jonghyun Choi

- Proposed an efficient algorithm for unsupervised multi-target domain adaptation of 3D point clouds. Accepted in CVPR (W) 2023

Aug 2020– Aug 2021 **Risk Analyst**, Wells Fargo, Bangalore, India

- Developed and maintained risk assessment models for the Home Lending team
- Developed automated tools to generate executive-ready model summaries in PowerPoint for shareholder presentations, reducing manual effort and turnaround time by $8\times$
- Documented SEC-compliant models to ensure regulatory transparency and audit readiness

June 2019– Aug 2019 **Research Engineer Intern**, Preferred Networks, Tokyo,
Advisor(s): Dr. Yohei Sugawara, Dr. Yuichiro Hirano

- Designed GANs with guided-attention for CT reconstruction from biplanar DRRs
- Designed a vector quantization (VQ) method in GANs for CT reconstruction with efficient memory and invariant image quality
- Work accepted to Medical Imaging meets NeurIPS (W) 2019

Mar 2019– July 2019 **Research Intern**, Ècole de Technologie Superieure, Canada (remote),
Advisor: Prof. Jose Dolz

- Designed a novel attention module for Semantic Segmentation of abdominal region
- Work accepted at the Journal of Biomedical and Health Informatics (JBHI)

Aug 2018– May 2019 **Data Scientist Intern**, Ryelore AI, London (remote)

- Trained semantic segmentation models (DeepLabV3, SegNet) on satellite imagery datasets for predicting land area suitable for farming
- Created tests and automated scripts for data pre-processing
- Developed mathematical models to predict solar energy output of the farms for expanding the solar farms in the Asia-Pacific region

Awards & Achievements

Feb 2024 **Ralph M Howatt Graduate Scholarship**, *SFU Computing Science*

Aug 2023 **DBMiner Graduate Scholarship**, *SFU Computing Science*

Jan 2023 **Backwater/Jost Grad Scholarship**, *SFU Computing Science*, Ebco Eppich Award Competition

Apr 2020 **NTIRE 2020 Demoireing Challenge**, *CVPR 2020*, Rank 13

Apr 2019 **PetFinder.my Adoption Challenge**, *Kaggle*, Bronze Medal

July 2017 **Merit-cum-Means Scholarship for 3 years**, *IIT Roorkee*

Mar 2017 **Science and Technology Quiz**, *Cognizance IIT Roorkee*, Rank 1

Skills

Languages Python, BASH, C++, MATLAB, SQL

Frameworks PyTorch, Chainer, Keras, ROS, StreamLit, Gradio

Libraries numpy, Pytorch3D, Open3D, HuggingFace, Diffusers, Weights & Biases, matplotlib, pandas, scikit-image, scikit-learn, ManiSkill3

Tools nVIM, Git, VS Code, Docker, Apptainer, SLURM, Tableau, LaTeX, Blender