Ashish Sinha

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Research Interests →

Intersection of Computer Vision, Graphics, and Machine Learning.
Especially, Neural Rendering, 3D Reconstruction, and applications in Medical Imaging and Life Sciences.

Education

2021 – Present **Simon Fraser University**,
MSc, Computer Science,
Pri. Advisor: Prof. Ghassan Hamarneh

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

Publications

⋆ Indicates Equal Contribution and First Authorship.

2023 | CVPR ***MEnsA*: Mixup Ensemble Average for Multi Target Domain Adaptation on Point Clouds**
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops
A. Sinha, J. Choi

2020 | JBHI **Multi-Scale Self-Guided Attention Networks for Medical Image Segmentation**
Journal of Biomedical and Health Informatics
Citations: 400+
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

2020 | CVPR **Ntire 2020 Challenge on Image Demoireing: Methods and Results**, *CVPR*
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops
S. Yuan, [and 45 others, including **A. Sinha**]

Pre-Prints

2024 | Submitted **Representing Anatomical Trees by Denoising Diffusion of Implicit Neural Fields**
A. Sinha, G. Hamarneh
Under review in MICCAI

2023 | Submitted **DermSynth3D: Synthesis of *in-the-wild* Annotated Dermatology Images**
A. Sinha⋆, J. Kawahara⋆, A. Pakzad⋆, K. Abhishek, M. Rutheven, E. Ghorbel, A. Kacem, D. Aouada, G. Hamarneh
Under review in Medical Image Analysis (MedIA)

Experience

Sept 2021– Present **Research Assistant**, Medical Image Analysis Lab (MIAL), SFU, Burnaby, Canada
- Worked on generating anatomical trees using diffusion modeling of neural fields.
- Created a differentiable rendering framework to generate synthetic clinical data.
- Worked on lifting ventricular structures from a single 2D image to 3D.
- Advisor(s): Prof. Ghassan Hamarneh

Dec 2020– Aug 2021 **Research Intern**, GIST Vision Lab, South Korea
- Worked on multi-target domain adaptation for point clouds.
- Work accepted at L3D-IVU CVPR (2023) workshop.
- Advisor: Prof. Jonghyun Choi.

Aug 2020– Aug 2021 **Risk Analyst**, Wells Fargo, Bangalore, India
- Responsible for the development and maintenance of risk-assessment models.
- Automated the pipeline for summarising the model's execution results in a clean PPT.
- Responsible for maintaining the documentation.

June 2019– Aug 2019 **Research Intern**, Preferred Networks, Tokyo
- Designed Guided Attention for improving the CT reconstruction from biplanar DRRs.
- Designed Vector Quantization(VQ) method for efficient memory with invariant image quality.
- Work accepted to Medical Imaging meets NeurIPS Workshop (2019).
- Advisor(s): Yohei Sugawara, Yuichiro Hirano and Dr. Kenta Oono.

Mar 2019– July 2019 **Research Intern**, Ècole de Technologie Superieure Montreal, Canada
- Designed a novel attention module for Semantic Segmentation of abdominal region.
- Paper accepted at the Journal of Biomedical and Health Informatics (JBHI)
- Advisor: Prof. Jose Dolz.

Teaching Experience

Fall 2022 **Intro to Computing Science**, *CMPT 120*, Graduate TA
- Responsible for grading, and creating exams for a batch of 450 students.
- Organized office hours for helping students' assignments in *python*.
- Course co-ordinator(s): Prof. Diana Cukierman and Prof. Angelica Lim.

Spr 2023, '24 **Intro to Computer Systems**, *Graduate TA*, CMPT 295
- Responsible for grading, and creating exams for a batch of 190 students.
- Organized office hours for helping students' assignments in *C* and *Assembly*.
- Course co-ordinator(s): Prof. Anne Lavergne.

Jan 2018,'19 **General Chemistry**, *CYN 006*, Undergraduate TA
- Taught Organic and Physical chemistry to a batch of 86 students.

Jul 2018 **Intro to Computer Programming**, *MTN-103*, Undergraduate TA
- Taught the fundamentals of programming in C++ to a batch of 80 students.

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

Nov 2021 **NeurIPS 2021 Travel Grant**, *NeurIPS*

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

Nov 2019 **NeurIPS 2019 Travel Grant**, *NeurIPS*

July 2019 **Secure and Private AI Scholarship**, *Udacity*

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*, Winner

Skills

Languages Python(A), C/C++(I), Java(B), SQL(A), SAS(B), Assembly(B)

Frameworks PyTorch, Taichi, JAX, Chainer, Keras

Utilities Git, SLURM, (Neo)Vim, Docker, LaTeX, Blender, MeshLab, PyVista, Mayavi, Tableau

Communication English(SRW), Hindi(SRW), Japanese(SRW)

Relevant Courses

Online Cognitive Science, Intro to Psychology, CS231n, CS224n, Stat 110, Intro to Deep Reinforcement Learning, Game Theory, Intro to Graph Theory,

Classroom Neural Advanced Rendering, ML for Life Sciences, Algorithm Design, Computer Vision, Geometric Modelling in Computer Graphics, Machine Learning, Generative Modelling, Linear Algebra, Differential/Integral Calculus, PDEs,

Life Outside of Lab

➔ Before experiencing transits in Tokyo and Vancouver, I was a *librocubicularist*, and now I'm a *journey-book junkie* as well.

➔ After a day's work of research work and *(over)* thinking, I'm either dozing off, baking, reading novels or quizzing.