

Ashish Sinha

Education

- 2021–2023 **Simon Fraser University**,
MSc, Computer Science,
Advisor: Prof. Ghassan Hamarneh.
- 2016–2020 **Indian Institute of Technology Roorkee**,
B. Tech, Materials Science,
Advisor: Prof. K.S. Suresh.

Publications

- 5 **MEnsA: Mixup Ensemble Average for Multi Target Domain Adaptation on Point Clouds**,
A. Sinha, *J. Choi*, Pre-print Under Review, 2021.
- 4 **Multi-scale Self-Guided Attention Networks for Medical Image Segmentation**,
A. Sinha, *J. Dolz*, Journal of Biomedical and Health Informatics, 2020.
- 3 **GA-GAN: CT reconstruction from Biplanar DRRs using GAN with Attention**,
A. Sinha, *Y. Sugawara*, *Y. Hirano*, NeurIPS (W), 2019.
- 2 **Deep Learning Based Dimple Segmentation for Quantitative Fractography**,
A. Sinha, *K.S. Suresh*, Industrial Machine Learning Workshop, ICPR, 2020.
- 1 **Ntire 2020 challenge on image demoireing: Methods and results**,
S. Yuan, [and 45 others, including **A. Sinha**], CVPR (W), 2020.

Experience

- Sept 2021– Present **Research Assistant**, MEDICAL IMAGE ANALYSIS LAB (MIAL), SFU, Burnaby, Canada.
◦ Working on lesion detection on human meshes.
◦ Advisor(s): Dr. Jeremy Kawahara, Prof. Ghassan Hamarneh.
- Dec 2020– Aug 2021 **Research Intern**, GIST VISION LAB, SOUTH KOREA.
◦ Worked on multi-target domain adaptation for point clouds. Advisor: Prof. Jonghyun Choi.
◦ Work currently under review.
- Aug 2020– Aug 2021 **Risk Analyst**, WELLS FARGO, BANGALORE, INDIA.
◦ Responsible for development and maintenance of financial models.
- 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).
- Mar 2019– July 2019 **Research Intern**, ÉCOLE DE TECHNOLOGIE SUPERIEURE MONTREAL, CANADA.
◦ Designed a novel attention module for Semantic Medical Image Segmentation of abdominal region advised by Prof. Jose Dolz.
◦ Paper accepted at the Journal of Biomedical and Health Infomatics (JBHI)
- Aug 2018– May 2019 **Data Scientist Intern**, RYELORE AI, LONDON.
◦ Implemented various semantic segmentation models on satellite imagery.
◦ Created tests and automation scripts.
◦ Worked on expanding the solar farms in the Asia-Pacific region by predicting the solar energy output of the farms.

- May 2018– **Data Science Intern**, ANTRIEX IT SERVICES, GURGAON, INDIA.
- July 2018
- o Developed various Trading strategies involving Bollinger Bands and other technical trade indicators with the help of TA-Lib library.
 - o Implemented an MLP classifier to generate trade signals that increased the accuracy by 1.02%.

Projects

- Sept 2019– **Automated Defect Detection at macro and micro scale (Bachelor Thesis)**, Prof. K.S. Suresh,
Mar 2020 *IIT Roorkee.*
- o Collected the images of Fe and Ti alloys at micro and macro scale.
 - o Developed an Attention based U-Net inspired model to segment surface defects and dimples in Fe and Ti respectively.
 - o Accepted for publication at ICPR (W) 2020.
- Apr 2020 **NTIRE 2020 Image Demoireing Challenge (CVPR 2020)**, *Self-motivated.*
- o Proposed feature fusion attention network for image demoireing.
 - o The method ranked 13 out of 173 participants. CVPRW Paper
- Aug 2018 **Neural Arithmetic Logic Units [Code]**, *Self-motivated.*
- o Implemented the paper *Neural Arithmetic Logic Units* by Trask et. al. in Keras.
- Nov 2018 **Quora Insincere Question Classification**, *Self-motivated.*
- o Implemented a CNN-LSTM architecture with attention to detect toxic content in online media.
 - o Achieved an F1-Score of 0.73 and ranked in the Top 13% on Kaggle LB.
- May 2018 **Simplifying Rough Sketches Using Deep Learning [Code]**, *Self-motivated.*
- o Implemented the paper *Learning to Simplify: Fully Convolutional Networks for Rough Sketch Cleanup* by Simo-Serra et. al in PyTorch.

Achievements

- 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)
- Frameworks PyTorch, Chainer, Keras
- WebD HTML/CSS, JavaScript, Jekyll
- Utilities Anaconda, Git, Vim, Tableau, VS Code, Jupyter Notebook
- Communication English(SRW), Hindi(SRW), Japanese(SRW)

Relevant Courses

- Online CS231n: CNNs for Visual Reconition, CS224n: DL for NLP, CS229: Machine Learning, Stat 110 : Intro to Probability, Intro to Deep Reinforcement Learning, Algorithms Part 1 and 2 (Princeton), Game Theory, Intro to Graph Theory,
- Classroom Machine Learning, Generative Modelling, Linear Algebra, Differential Calculus, Integral Calculus, Vector Calculus, Differential Equations, Programming in C++, Inferential and Descriptive Statistics

Extra Curriculars

- Apr 2018 **Vision and Language Group**, *Executive Member.*
- The group aims to foster Deep Learning research among students by conducting discussions and implementations on various Research Papers in the field of Computer Vision and NLP.

- Sept 2019 **Research Interest Group**, *Co-Founder*.
Started a weekly research discussion group in my department which aimed to encourage freshmen and sophomores towards inter-disciplinary research by organizing research talks and paper discussions.
- Jan 2018-'19 **Academic Reinforcement Program**, *Undergraduate Teaching Assistant*.
Taught General Chemistry (CYN-006) to a batch of 86 students.
- Jul 2018 **Academic Reinforcement Program**, *Undergraduate Teaching Assistant*.
Taught Intro to Computer Programming in C++ (MTN-103) to a batch of 80 students.
- Feb 2018 **Sangram IIT Roorkee**, *Web Developer*.
Developed the website for Sangram, IIT Roorkee, the official annual Sports fest of IIT Roorkee.
- Dec 2015 **Quizense**, *Co-Founder*.
Co-founded a school start-up along with 2 others which aimed to make learning fun with the help of competitive quizzes.