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Ashish Sinha

Education

2016–2020 **Indian Institute of Technology Roorkee**,
Bachelor of Technology.

Publications

Multi-scale Self-Guided Attention Networks for Medical Image Segmentation,
A. Sinha, *J. Dolz*, Journal of Biomedical and Health Informatics, 2020.

GA-GAN: CT reconstruction from Biplanar DRRs using GAN with Attention,
A. Sinha, *Y. Sugawara, Y. Hirano*, NeurIPS (W), 2019.

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

Ntire 2020 challenge on image demoireing: Methods and results,
S. Yuan, [and 45 others, including ***A. Sinha*** *]*, CVPR (W), 2020.

Experience

Dec 2020– Present **Research Intern**, GIST Vision Lab, South Korea.
- Working on 3D scene understanding. Advisor: Jonghyun Choi.

Aug 2020– Present **Program Associate B**, Wells Fargo, Bangalore, India.
- Joined the Home Lending risk team as a Risk Analyst in early August.

June 2019– Aug 2019 **Research Intern**, Preferred Networks, Tokyo.
- Implemented a GAN for the generation of CT scans from Biplanar DRRs.
- Designed Guided Attention for improving the image generation quality.
- Designed Vector Quantization(VQ) method for efficient memory with invariant image quality.

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

Projects

July 2020 - Ongoing **Progressive Networks for Unsupervised Image Restoration**, *Self-motivated*.
- Working on semi/unsupervised image restoration tasks like dehazing, deraining, etc.
- Implemented papers like MSPFN and PECNN in Pytorch.

Sept 2019–Mar 2020 **Automated Defect Detection at macro and micro scale (Bachelor Thesis)**, *Prof. K.S. Suresh, IIT Roorkee*.
- Collected the images of Fe and Ti alloys at micro and macro scale.
- Developed an Attention based U-Net inspired model to segment surface defects and dimples in Fe and Ti respectively.
- Accepted for publication at ICPR (W) 2020.

Apr 2020 **NTIRE 2020 Image Demoireing Challenge (CVPR 2020)**, *Self-motivated*.
- Proposed feature fusion attention network for image demoireing.
- The method ranked 13 out of 173 participants. CVPRW Paper

Aug 2018 **Neural Arithmetic Logic Units [Code]**, *Self-motivated*.
- Implemented the paper *Neural Arithmetic Logic Units* by Trask et. al. in Keras.

Nov 2018 **Quora Insincere Question Classification**, *Self-motivated*.
- Implemented a CNN-LSTM architecture with attention to detect toxic content in online media.
- 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*.
- 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(I)

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 Linear Algebra, Differential Calculus, Integral Calculus, Vector Calculus, Differential Equations, Economics, Marketing Research, Environmental Economics, 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.

References

Jose Dolz,
Assistant Professor,
Department of Software and IT Engineering,
ETS Montrèal.
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K.S Suresh,
Assistant Professor,
Metallurgical and Materials Engg. Dept.,
IIT Roorkee.
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Yohei Sugawara,
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Preferred Networks, Japan,
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Yuichiro Hirano,
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