Nirmal Praveen **Suthar**

PRE-FINAL YEAR UNDERGRADUATE

Indian Institute of Technology Kanpur · Computer Science and Engineering

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Education

Indian Institute of Technology Kanpur   *Kanpur, India*
BACHELOR OF TECHNOLOGY, MAJOR IN COMPUTER SCIENCE AND ENGINEERING   *Jul, 2018 - Jul, 2022 (expected)*
- Cumulative Grade Point/CGPA: **9.33/10.00**
- Awarded Academic Excellence 2018-2019

Shri Gurukripa Vidya Sankul HIGHER SECONDARY SCHOOL   *Surat, India*
- Gujarat Secondary Educational Board, GSEB 2018: **85.1 %**

Fountainhead School SECONDARY SCHOOL   *Surat, India*
- General Certificate of Secondary Education, IGCSE 2016: **86.0 %**

Awards and Achievements

2020	**Offered Research Assistant Intern**, Prof. Abhijit Mahalanobis, University of Central Florida	*Florida*
2019	**Academic Excellence Award**, Awarded for meritorious academic performance	*IIT Kanpur*
2018	**All India Rank 1004**, Joint Entrance Exam Advanced, 150,000 candidates	*India*
2018	**All India Rank 570**, Joint Entrance Exam Mains, 1.5 million candidates	*India*
2018	**Percentile Rank 99.68%**, Gujarat Common Entrance Test, state-level exam	*Gujarat*
2017	**KVPY Scholarship Awardee**, Indian Institute of Science and Government of India	*Bangalore*

Work Experience

Google Summer of Code   *Surat, India*
JULIALANG ORGANIZATION   *Apr. 2020 - Present*
- Developed a 3D vision library, Flux3D.jl which assists in processing and applying transforms/metrics on 3D datapoints.
- Implemented accelerated batched structures for Mesh, Voxels and Pointcloud, written in pure Julia, and also added support for GPU using CUDA.jl
- Used Flux.jl ML ecosystem to perform deep learning tasks on 3D structures which includes classification, segmentation and reconstruction tasks.
- Reviewed recent work on continuous normalizing flow (CNF) and worked out on implementation of using CNF to generate PointCloud using DiffEqFlux and Flux3D.jl.

Nutanix Summer of Code Intern   *IIT Kanpur*
SUPERVISOR: PROF. SANDEEP SHUKLA [NIRMAL-SUTHAR/SOC-OFFICEMARSHALL]   *May. 2019 - Jul. 2019*
- Worked in a team of 4 people to develop a prototype web-based platform, OfficeMarshall.
- Created a Multi-User login system and Monitored all the documents and its proceedings made by the concerned user in more sophisticated manner.
- Technological stack included Express, NodeJS, MongoDB and finally deployed the web-based platform using Heroku.

Projects

Flux3D.jl   *Surat, India*
OPEN SOURCE PROJECT [GITHUB.COM/NIRMAL-SUTHAR/FLUX3D.JL]   *Jun. 2020 - Present*
- Created heterogeneous batching for 3D inputs of different sizes such as mesh.
- Developed dataset wrapper for ModelNet10/40 in multiple variants including triangle mesh, voxels, and pointcloud along with visualizing utilities.
- Studied and wrote implementations of 3D vision models such as PointNet, PointNet++, DGCNN, 3DGAN using Flux.jl ML ecosystem and worked out efficient implementations of evaluation metrics like Chamfer Distance, Laplacian Distance and Edge Loss entirely in Julia, compatible with Zygote.jl (autodiff lib).

MemexQA Baseline
RESEARCH PROJECT, SUPERVISOR: BADRI NARAYANA PATRO [MEMEXQA-PYTORCH] *IIT Kanpur*
Jul. 2019 - Dec. 2019
- Reviewed the baseline code provided by the original authors of MemexQA and SOTA work on VQA.
- Load and preprocess/augment data from the raw dataset and developed dataloader for MemexQA dataset, from scratch, on PyTorch
- Trained MemexQA on attention based VQA model with minor changes to support multiple images per question.

A Study in GANs
SUMMER LONG PROJECT [GITHUB.COM/NIRMAL-SUTHAR/A-STUDY-IN-GANS] *Programming Club, IITK*
May. 2019 - Jul. 2019
- Studied CNN in depth and implemented several architectures (ResNET, DenseNET, VGG,etc) using PyTorch framework .
- Studied literature survey on Generative networks and GANs such as class conditioned, Style Transfer, Super Resolution and Attention based GANs
- Studied and wrote implementation of several GANs such as DCGAN, cGAN, ACGAN, InfoGAN, DiscoGAN, CycleGAN, StarGAN, SRGAN, SAGAN and compared the results using different evaluation metrics like PSNR and FID score.
- Implemented several variant of dataloader for use in Generative based networks.

VoteChain
MICROSOFT CODEFUNDO++ HACKATHON [GITHUB.COM/NIRMAL-SUTHAR/VOTECHAIN] *Microsoft India*
Aug. 2019 - Sep. 2019
- Developed a voting app, VoteChain which uses the principle of Blockchain and cryptography for a more secured election.
- Deployed app using Microsoft Azure Blockchain services.

Skills

Programming	Python, C/C++, Julia, JavaScript, Verilog
Deep Learning	PyTorch, Flux.jl, TensorFlow, Keras, OpenCV
Web	Express, NodeJS, Django, MongoDB, HTML/CSS
Operating Systems	Linux (ArchLinux, Ubuntu), Windows
Utilities	Git, LaTeX, Markdown, Travis, Bash, Lex/Yacc, SQL, AWK

Positions of Responsibility

Coordinator PROGRAMMING CLUB, IIT KANPUR
Apr. 2020 - Present
- Responsible for conducting activities and competitions for campus community.
- Mentored more than 100 students for projects on model-zoo, artificial neural network and Intro to ML.

Leader ULTIMATE FRISBEE SOCIETY, IIT KANPUR
Jun. 2020 - Present
- Responsible for conducting workshops and tournaments for Ultimate Frisbee.

Secretary PROGRAMMING CLUB, IIT KANPUR
Apr. 2019 - Mar. 2020

Secretary FINE ART CLUB, IIT KANPUR
Apr. 2019 - Mar. 2020

Student Guide COUNSELLING SEVICE, IIT KANPUR
Jul. 2019 - Apr. 2020

Relevant Coursework

- Real Analysis and Multivariable Calculus
- Linear Algebra and Ordinary Differential Equations
- Discrete Mathematics for Computer Science
- Computer Organization
- Fundamentals of Programming
- Data Structures and Algorithms
- Software Development and Operations
- Logic for Computer Science

Miscellaneous

- Delivered a talk on Flux3D.jl in ML community call Julia.
- Contribute to open source projects like Flux.jl, Kaolin, and maintain some projects on GitHub.
- Part of the Probabilistic Machine Learning and Inference group, IIT Kanpur, headed by Prof. Piyush Rai.
- Ranked 5th out of all IITs participated in Charcoal Painting, Cultural Meet 4.0 IIT Bombay.