

Shivasankaran Vanaja Pandi

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Education

Stony Brook University

New York, USA

Masters in Computer Science

2023 - 2025

- **GPA:** NA
- **Courses:** Computer Vision, Machine Learning

Indian Institute of Technology Gandhinagar

Gandhinagar, India

BTech(Hons) in Computer Science and Engineering

2019 - 2023

- **GPA:** 3.5
- **Courses:** Deep learning, Data Science, Natural Language Processing, Probability and random process

Research Experience

Graduate Researcher - SBU CVLab

New York, USA

Particle Picking for cryo-EM

Jul 2023 - Present

- Working on improving particle picking through deep learning methods
- **Supervisor:** Professor Habin Ling

Undergraduate Researcher - IITGN LINGO lab

Gandhinagar, India

LineEX: Data Extraction from Scientific Line Charts

Dec 2021 - Aug 2022

- Adapted existing vision transformers and human-pose estimation methods to Data extraction.
- Proposed a novel loss function for data extraction from line charts and proved its effectiveness.
- Developed a new metric to more accurately describes the quality of the extracted data points.
- Created the largest synthetic line chart dataset comprising 430K images.
- Accepted in WACV 2023
- **Supervisor:** Professor Mayank Singh

Undergraduate Researcher

Gandhinagar, India

A Benchmark for Sanskrit Word Segmentation Based on Word Difficulties

Dec 2022 - Ongoing

- Curated the largest annotated sanskrit word segmentation data of 630K sentences
- Designed a committee of models to estimated word difficulties
- Evaluated the current SOTA models performance on the benchmark
- Submitting to TACL
- **Supervisor:** Professor Mayannk Singh & Dr. Amrith Krishna

Undergraduate Researcher - IITGN CVIG Lab

Gandhinagar, India

Multi-Modal Generation and Retrieval of 3D objects and Images

Dec 2022 - Ongoing

- 3D styled shape generation from text inputs. Secured 4th position at IITGN undergraduate research showcase
- Implemented and open-sourced the SOTA text-sketch based zero-shot image retrieval, where no prior code was available
- Explored novel approaches to text-sketch based zero-shot 3D-object retrieval
- Presented all the above works at undergraduate research showcase of IIT Gandhinagar
- **Supervisor:** Professor Shanmuganathan Raman

Undergraduate Researcher - IITGN HCR Lab

Gandhinagar, India

Computer Vision Enabled Robust Terrain-Classification

Dec 2022 - May 2023

- Curated a custom dataset for IITGN for terrain classification comprising of 3K images per class
- Implemented and trained a CNN network for terrain classification on Raspberry pi
- Designed a system equipped with the optimized CNN network for real time inference and gait assistance
- Model achieved in-domain real-time accuracy of 93% and out-of-domain accuracy of 85%
- **Supervisor:** Professor Vineet Vashita

Internships

Uniphore

Chennai, India

Data Science Intern

Jun 2023 - Aug 2023

- Working on few-shot intent classification leveraging episodic learning
- Exploring alternative architectures for efficient learning under few-shot setting

Strand Life Sciences

Software Intern, Research Informatics

- Quantification and Identification of Tumor-infiltrating lymphocytes from WSIs.
- Evaluated various models proposed in the scientific literature for Industrial use.
- Implemented changes in certain models and evaluated their performance.
- Adopted various methods to bridge the lack of big datasets available for the task
- Created a pipeline based on the current State of the art model for the problem.

Bangalore, India

May 2022 - Jul 2022

Projects

‘Sufficient’ Attention is All You Need

IIT Gandhinagar

Gandhinagar, India

Aug 2022 - Oct 2022

- Explored sparse self-attention patterns for small scale vision transformers with limited training data
- Best-performing sparse self-attention ViT outperforms the full self-attention variant by 12 accuracy points
- Exploring the possibility of alternative learnable attention patterns instead of fixed full self-attention

COMMENTATOR: A Code-mixed Multilingual Text Annotation Framework

IIT Gandhinagar

Gandhinagar, India

Aug 2022 - Oct 2022

- Extended the annotation tool for multilingual sentiment analysis.
- Implemented features for sentence-level and word-level sentiment suggestions.
- Notable features include an uploadable custom model for sentence-level suggestions.

Movie recommendation system using Neural collaborative model

IIT Gandhinagar

Gandhinagar, India

Feb 2021 - Apr 2021

- Implemented and trained a neural collaborative filtering model.
- Implemented content-based method and matrix factorization method.
- Achieved **SOTA** RMSE of 0.84 for the Neural collaborative model.

Sign Language Translator In Verilog Using Convolutional Neural Networks

IIT Gandhinagar

Gandhinagar, India

Sep 2020 - Nov 2020

- Implemented a convolutional neural network in Verilog.
- Optimized the network to work with Verilog floating point precision system.
- Attained an accuracy of 85%.
- Designed the final system to be synthesizable on a FPGA board.

Publications

- **Shivasankaran V P**, Muhammad Yusuf Hassan, Mayank Singh. LineEX: Data Extraction from Scientific Line Charts. WACV 2023.
- Bhavuk Singhal, Ashim Gupta, **Shivasankaran V P**, Amrith Krishna. IntenDD: A Unified Contrastive Learning Approach for Intent Detection and Discovery. *Under review EMNLP 2023*
- **Shivasankaran V P**, Amrith Krishna, Ashim Gupta, Mayank Singh. A New Benchmark for Sanskrit Word Segmentation. *Submitting to TACL*

Teaching Experience

Undergraduate Teaching Assistant: ES 413 Deep Learning

IIT Gandhinagar

Gandhinagar, India

Jan 2023 - Ongoing

- Created and taught tutorials for graduate students at IITGN of various fundamental deep learning and computer vision topics

Skills

Programming Python, PyTorch, Tensorflow, C/C++, Flask, HTML/CSS, JavaScript, SQL, .

Miscellaneous Linux, Shell (Bash), Git.

Achievements

2022	Dean's list , Showcased academic excellence in semesters 1 & 6	India
2022	Google research week , was one of the few undergraduate participants selected in the computer vision track	India
2022	Selection , Amazon ML summer school	India
2019	All India rank 1319 , JEE Advanced 2019; 1.6 lakh students	India
2019	All India rank 1916 , JEE Main 2019; 1.2 million students	India

References available upon request.