Shivasankaran Vanaja Pandi

Stony Brook University

+1 6319490169 | svanajapandi@cs.stonybrook.edu | shiva-sankaran.github.io | github.com/Shiva-sankaran | linkedin.com/in/shivasankaran-vp/

Education

Stony Brook University *New York, USA*

Masters in Computer Science *2023 - 2025*

- **GPA:** 4.0
- **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, Probablity 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
- **Supervisior:** 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
- **Supervisior:** 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
- **Supervisior:** 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 - May 2023*

- 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
- **Supervisior:** 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 classfication 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%
- **Supervisior:** Professor Vineet Vashita

Internships

Uniphore *Chennai, India*

Data Science Intern *Jun 2023 - Aug 2023*

- Proposed a novel feature based graph construction and label propagation for intent discovery.
- Achieved 2.32% - 1.26% improvement in metrics w.r.t previous SOTA under various experiment settings.
- Accepted to EMNLP 2023

Strand Life Sciences *Bangalore, India*
Software Intern, Research Informatics *May 2022 - Jul 2022*

- 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.

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. *Accepted to 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.