

VISHNUCHARAN S

Tamil Nadu, INDIA

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Portfolio Website

EDUCATION

Bachelor of Technology in Production Engineering

National Institute of Technology, Tiruchirappalli (NIT Trichy)

Sep 2021 - Present

Tamil Nadu, INDIA

- **CGPA : 8.01/10** (Upto VI semester)
- **Minor:** Computer Science

12th Grade

Maharishi International Residential School

Mar 2019 - July 2021

Tamil Nadu, INDIA

- **Grades : 93.8%**

RELEVANT COURSEWORK

Curriculum: Industrial Robotics, Kinematics and Dynamics of Machines, Artificial Intelligence, Data Structures and Algorithm, Industry 4.0, Matrices and Calculus, Complex Analysis and Differential Equations, Probability and Statistics, Data Analytics, Numerical Methods for Engineers, CAD.

Other Certifications Deep Learning Specialization, Deep Learning with Matlab, Deep Learning Onramp, Google Data Analytics Professional Certificate, **Kaggle:** Intro to Deep Learning, Computer Vision

RESEARCH INTERNSHIPS

Bachelor's Thesis: Classification of Welding using Machine Vision

Advisor: Dr. V. Senthilkumar

Oct 2024 - Present

NIT Trichy, India

- Developed a **Faster R-CNN model with ResNet-50 backbone with FPN** for Defect Detection, and **ResNet-18** for welding defect classification. Collaborating with **CMTI – Govt. of India** for further research.
- Implemented model optimization with **Adam optimizer and CUDA**. Achieved **91% training accuracy & 87% validation accuracy** on the first 10 epochs. Going to work in **PARAM PORUL**, the super-computer of NITT

Summer Internship: MCQ generator based on Adaptive Learning

Advisor: Dr. Sonit Singh

June 2024 - Aug 2024

UNSW, Australia

- Designed an **adaptive learning MCQ generation system**. Focused on implementing emotion recognition via **Deep CNN with late fusion** for facial expression analysis and eye-tracking for real-time monitoring.
- Constructed a **multi-stage ML pipeline** combining CV with affective state feedback to adjust MCQ difficulty, leveraging **Bloom's Taxonomy** for enhanced User Experience.

Winter Internship: Image Segmentation with text prompts

Advisor: Dr. Sridevi M

May 2023 – Oct 2023

NIT Trichy, India

- Enhanced **text-guided segmentation** using **multi-modal transformers and adaptive thresholding**.
- Studied literature of Segmentation techniques and SAM. Introduced **adaptive thresholding** to the existing clip model of **FastSAM (Fast Segment Anything Model)** and integrated **CLIPSeg transformer** for text prompts.
- Optimized FastSAM with **semantic understanding** of the text prompts, segmentation of multiple objects in each frame, and controlled misclassification by thresholding. Drafting a research paper for the same.

PROJECTS

BharatamVerse

Sept 2024

- Implementing an **LSTM-based vision model** for Bharatanatyam pose correction using **skeletal keypoint extraction** for real-time feedback at NITTin collab with **Prof. Dag Svanæs, NTNU** for enhanced HCI.
- Applied **Vision Transformers (ViT)** for spatial pose analysis, combining temporal and spatial features for accurate movement prediction and integrating EEG data to assess emotional states during dance.
- Developing a **Streamlit web-app** for real-time feedback, with **Mediapipe and FFmpeg** for pose extraction.

- Developed **Reforge** of photocobra.com, an AI-powered image generation platform using **ControlNet** and **mask prompts** for image manipulation and enhancement.
- Leveraged **Realistic Vision v5.1**, **Disney Pixar Cartoon type B v1.0** via **Astria API** & optimized workflows for improved visual accuracy, enabling targeted modifications with input images or FaceIDs & mask inversion.

Remote Sensing Image Captioner

Mar 2024

- Developed a **state-of-the-art** model to **generate descriptive captions** for the given remote sensing images.
- Fused **Inception V3's** CNN encoder pre-trained on **ImageNet** with a **Custom Transformer Network** to generate captions and provided a **feature** to snapshot the image from live **Google Maps**.
- Achieved a **BLEU score of 0.59/1.00** on the validation dataset, while the normal human BLEU score is 0.60/1.00. Built an interactive **web app** for captioning geo-satellite images.

SKILL SUMMARY

Programming Languages: Python, C++ , Matlab, SQL, HTML, CSS, Javascript, React

Data Visualization: PowerBI, Tableau, Origin Pro, Matplotlib, Seaborn

Deep Learning: OpenCV, Pytorch, Ultralytics, Jupyter Notebook, Scikit, Tensorflow, NLTK

Others: Cuda, ROS2, Solidworks, Ansys, Creo, Latex, Photoshop, Premiere Pro, Blender, Scrapy

EXECUTIVE POSITIONS

Technical Council, The Techno-Managerial Wing of Students' Council

NIT Trichy

Director of Campus Affairs

Apr 2024 – Present

- Supervised the activities of **Technical clubs** like **Robotics & Machine Intelligence**, **Spider R&D**, **Delta**, etc.
- Worked as a **Core Member** for **Google Developer Group** and allocated budget of **Rs. 17 million** for clubs.
- Initiated campus development solutions like **HackNITTe**, **TechNITT** & fostered students' growth via events.
- Organized **TransfiNITTe'24**, flagship hackathon of NITT with **5500+** participants & prize of **Rs. 6 Lakhs**.
- Coordinated and Organized **Pragyan**, NIT Trichy's **ISO 9001 and 20121** certified Technical fest.

NITTFEST Design Team, Cultural Fest

NIT Trichy

Head of Design

June 2023 – Apr 2024

- Led a team of **37 juniors** to produce high-quality Media content for the fest. Specialized in Softwares like **Photoshop**, **Premiere Pro**, **After Effects & Blender** and mentored the juniors about the same.
- Ideated content for the team's social media handles regarding the fest happenings, reaching over **900k views**.

IGNITTE, The Teaching Club

NIT Trichy

Maths Onfoot Mentor and Manager

Apr 2022 – Present

- Mentored and Guided **40+** underprivileged high school students for national level competitive exams.
- Taught maths and assisted students to secure admission in colleges of National Importance like **NIT**, **IIT**, **CFTI**.

Pixelbug, The Official Photography & Videography Club

NIT Trichy

Senior Photographer & Videographer

Apr 2023 – Nov 2023

- Captured Photos and Videos of various Fests like **Festember** with **23k+** footfall using Canon, Sony Cameras.
- Post Processed the Photos and Videos for Social Media Campaign and Outreach of the Fests.

ACHIEVEMENTS

Smart India Hackathon'24

Govt. of India

2nd of 97 teams that participated the internal hack, **qualified to represent NIT Trichy** in the finale.

TriNIT Hackathon'24

NIT-T, NIT-W, NIT-K

Runner Up in the hackathon by 3 NITs with **4,200+** participants in Machine Learning Domain.

CSWA (Certified SolidWorks Associate)

Dassault Systèmes, FRANCE

Received **Associate level** certification for CAD Modelling in **SolidWorks**

LINKS ATTACHED

- LinkedIn - <https://www.linkedin.com/in/vishnucharans/>
- Portfolio Website - <https://vishnucharan-portfolio.netlify.app/>
- Certifications -
<https://drive.google.com/drive/folders/1XBpgCpqUfzTWJEAAct98XwCB55Q65JDQr?usp=sharing>
- Achievements -
<https://drive.google.com/drive/folders/1D4JvBOXC1ZixiLdPT826YM3m6vUSwOBY?usp=sharing>