

Education

Program	Institution	Year of completion
PhD (CV/ML)	Colorado State University, USA	2025
M.Tech (CSE)	IIT Madras, India	2017
B.Tech (CSE)	SCMS,Kerala,India	2011
XII (CBSE)	The Indian School,Bahrain	2007
X (CBSE)	Jyothi Nivas,Kerala	2005

Professional Experience

Oppo US Research Centre, Seattle, *Computer Vision Engineer I*, March 23,2020-August 14,2020

- Improve the performance of computer vision algorithms for video manipulation on mobile phones.
- Worked on GLSL, Halide and DSP Programming.

Varsity Tutors and Wyzant, Online/Freelance, *Computer Science Tutor*, January 2020-March,2020

- Tutored students and professionals in Programming (C,C++, Java), Operating Systems, Compilers, Data Structures and Algorithms, Dynamic Programming, Artificial Intelligence etc.

Vegavid Technology, Remote, *Computer Vision and Machine Learning Intern*, April 25,2019-March 22,2020

- Worked on implementing an automated preprocessing task for improving the performance of OCRs (Optical Character Recognition) using Machine Learning.
- Worked on Implementing a research paper titled "Selecting Automatically Pre-Processing Methods to Improve OCR Performances".

Intel,Bangalore, *Imaging IP Simulation Engineer*, February 1,2018- December 21,2018

- Responsible for determining, specifying and evaluating the viability of complex hardware features and structures and ensuring that software and hardware designs interface correctly. Defines, documents and tests processes for inclusion into technical platforms, subsystem specifications, input/output and working parameters for hardware and/or software compatibility.
- My work included fixing bugs, building entire modules in the imaging pipeline, incorporating C++ coding guidelines to the project at hand and collaborating with team members on good coding practices, building POC models for applying ML to modules etc.
- Was part of a four member team that visited Eindhoven, Netherlands for knowledge handover to shift the operations to Bangalore, India. It was a good learning experience in terms of team collaboration, fixing complex coding issues and on how to write code from technical specification documents.

Intel,Bangalore, *Software Development Engineer in the power and performance team*, June 07,2017-January 31,2018

- Analyse, debug and resolve performance issues in Intel processors.
- Implemented two POC's for building an entire database for the Power and Performance team in Intel and built a reporting front end. One front end was built using PHP, bootstrap and codeigniter framework. The other one was built using the Qlikview reporting tool.

Subex Ltd,Bangalore, *System Analyst*, July 2011-July 2014

- Analyze the requirements, design, research, develop, unit test and assist senior team members.
- Experience in multi-layer network and service discovery, data reconciliation and discrepancy analytics.
- Interpret customer's CDRs and incorporate various types of Volume agreements, import of the carrier invoices to the system and bill components which cater to their specific invoices. Development of customized reports using Qlikview.

- Clients - TMobile(Americas), GVT(Brazil), Verizon(Americas), Telus, ATT etc.

Research at Colorado State University

Hand Grasps, August,2020-Ongoing

- Research and exploration in the area of hand pose estimation and hand grasps culminating in broader research in the area of hand grasps considering the affordance of objects and the intended task.

Skills Used : Python Scripting, PyTorch, TensorFlow

Affordances, October,2021-Ongoing

- **Affordance** is not defined properly in Computer Vision. Along with teams from Brandeis University and University of Frankfurt, I am trying to redefine the existing affordance definition by bringing it under the umbrella of Gibsonian and telic affordances. As part of this work, I have worked extensively on customizing the VIA annotation tool, did python scripting for data preprocessing, used images from HICO-DET as input for annotations, quantified the habitat of the human object interactions by formulating conditional and joint probabilities using python script.

Skills Used : JavaScript, Python Scripting, PyTorch

Reinforcement Learning for Embodied Agents, January,2022-Ongoing

- Formulating an RL policy for affordance planning and embodied agent navigation.

Research Internships

TU Graz, Virtual Internship, June 2022-August 2022

- Internship in the area of 3D hand pose estimation in Dr. Vincent Lepetit's lab under the guidance of Shreyas Hampali.

Skills Used : PyTorch

TU Graz, Virtual Internship, May 2021-August 2021

- Internship in the area of 3D hand pose estimation in Dr. Vincent Lepetit's lab under the guidance of Shreyas Hampali.

Skills Used : PyTorch

Academic Projects/Assignments

PhD Course Project **Robot Grasping (CS793)**, August,2021 - December,2021

- Experimenting with Reinforcement Learning and 3D geometry to generate grasps for various objects.

PhD Course Project **Big Data (CS535)**, January,2021 - May,2021

- Used Deep Learning and Big Data techniques to make COVID-19 predictions.
Link to project : [COVID-19 prediction](#).

PhD Course Project **Real Time Tracking of 3D objects(CS793)**, September,2020 - December,2020

- Real time tracking of 3D objects to enable the avatar(DIANA) to grasp 3D objects.
- Worked on modifying project Honnotate.
Link to project by TU Graz team : [Honnotate](#).

PhD Course Assignments **Machine Learning (CS545)**, August,2020 - December,2020

- Construct Machine Learning models - polynomial regression, deep learning, reinforcement learning etc.
- Link to github : [CS545 Assignments](#)

M.Tech Long Project **3D Reconstruction - Drone**, July,2016 - April,2017, Subteam size : 2

- Designing a quadcopter based system for 3D reconstruction of inaccessible buildings to help rescue forces plan efficient operations. The results are based on amalgamation of SLAM (using stereo cameras and SFM) and path planning algorithms. The quadcopter is autonomous and uses the 3D reconstruction by the camera mounted on it for path planning.
- Link to project code : [Masters project](#)

M.Tech Course Project **Application of Optimization Methods in Computer Vision (CS6777)**

- The Efficient Large-Scale Stereo Matching (ELAS) algorithm was studied to apply optimization algorithm to get a computationally more efficient version of disparity image generation. Also, the effect of various parameters of the objective function was studied on different data sets.

M.Tech Course Project **Comparative Study of Pattern Recognition Methods (CS6690)**

- Did a study of MLFFNN, DCNN, DBM, GMM, DHMM, DTW, bayesian classifiers, dimension reduction using PCA, autoencoder and stacked autoencoder, regression, novelty detection, clustering, semisupervised learning, classification using kernels, perceptron, FDA, SVM, SVD, EVD.

Course Work

- **Algorithms:** Advanced Data Structures and Algorithms (CS5800), Advanced Programming Lab (CS6140)
- **Machine Learning:** Pattern Recognition (CS6690), Kernel Methods for Pattern Analysis (CS6011), Machine Learning (CS545)
- **Computer Vision:** Imaging Computation (CS510), Optimisation Methods for Computer Vision Applications (CS6777)
- **Research:** Research Seminar - Computer Vision and ML (CS793), Research Seminar - Robotic Grasp with Reinforcement Learning (CS793), Introduction to Research (CS692)
- **Big Data:** Big Data (CS535)
- **Miscellaneous:** Linear Algebra and Random Processes (CS6015), Cryptography and Network Security (CS6500), Digital System Design and Testable Design (CS6330), Theory and Applications of Ontologies (CS6852)
- **Teaching Assistantship:** Algorithms Theory and Practice (CS320), Digital Logic Design, Programming Lab

Teaching

- [Algorithms Theory and Practice \(CS320\)](#) [Colorado State University]
- [Digital Logic Design \(CS2310\)](#) [IIT Madras]
- [Computer Programming Lab \(CS2110\)](#) [IIT Madras]

Technical Skills

- **Languages:**
Proficient - C, C++, OpenCV, Python; *Intermediate* - Java, Halide, MATLAB; *Basic* - JavaScript, HTML.
- **Software Tools:**
IDEs - PyCharm, Visual Studio, Visual Studio Code, Eclipse; *Code Collaboration* - Gerrit, Git; *Databases* - PL/SQL, Oracle SQL; *Issue Tracking* - Jira; *Reporting Tool* - Qlikview; *Document Preparation* - Latex; *Computer Vision* - VIA annotation tool.

Links to Other Code

- [HackerRank Solutions in C++](#)
- [LeetCode Solutions in C++](#)

Professional Training/Workshops

- Subex - Qlikview (business reporting tool).
- Intel - How to write clean and efficient code, Efficient debugging using gdb.
- IIT Madras - Competitive Programming.

Achievements

- School topper in 10th Standard.
- Secured All India Rank 391(99.66 percentile) in GATE-Computer Science,2015.
- Anchor for two episodes for Kairali TV - selected from school.
- Bahrain ToastMaster Best Speaker Award - twice.
- Certified with A+ for Infosys Campus Connect in college- a soft skills development program.

Leadership Experience

- VP of Events - Science in Action (Science Communication and Policy group at Colorado State University), 2021-22
- Graduate Events Committee Representative, Computer Science Department, Colorado State University, 2020-21

Volunteering

- Student Ambassador(IITM) for YourStory Media, India's no.1 media platform for entrepreneurs. Responsible for writing articles and brand management ([Link to my YourStory Articles](#)).
- Student Mentor - I mentor undergraduate students in the Computer Science department.
- Member of the event organizing committee for ComSciCon RMW 2021 (Science communication workshop for STEM grad students in the Rocky Mountain West region, planned by grad students).

Hobbies

- I write articles on www.medium.com - [Link to my Medium Articles](#).

Declaration

I hereby declare that all the information given above is true to the best of my knowledge.