

# Vipin Gautam

E-mail: [vipin2113106@iitgoa.ac.in](mailto:vipin2113106@iitgoa.ac.in)

GitHub: <https://github.com/vipingautam1906> Contact Number: +91 9899135743

## Education

<b>M.Tech, Computer Science and Engineering</b> , Indian Institute of Technology (IIT) Goa	<b>8.35/10</b>	2021-2023
<b>Masters in Computer Applications (MCA)</b> , Indira Gandhi National Open University	<b>67.04 %</b>	2018-2021
<b>Post Graduate Diploma in Computer Applications (PGDCA)</b> , Indira Gandhi National Open University	<b>69.40 %</b>	2018-2019
<b>Bachelor of Arts</b> , University of Delhi	<b>50 %</b>	2013-2017

## M.tech Thesis

**Thesis Topic:** YOLO-based Multi-Camera Tracking System for Person Tracking [Slides].

**Supervisor(s):** Dr. Sharad Sinha. and Dr. Shitala Prasad, IIT Goa.

The work involves the design and implementation of real-time person-tracking algorithms for intra-inter camera tracking tasks, where a region of interest is identified in one of the feeds and the suspect is tracked across multiple non-overlapping cameras.

**1:** Developed intra-camera tracking algorithm using Kernelized Correlation Filter and IOU constraints.

**2:** Proposed inter-camera tracking algorithm using deep learning-based person ReID model and camera network information.

## PUBLICATION(s)

### YOLORe-IDNet: An Efficient Multi-Camera System for Person-Tracking

**Vipin Gautam**, Dr. Shitala Prasad, Dr. Sharad Sinha

- In Press, 8th IAPR International Conference on Computer Vision and Image Processing (CVIP) 2023, Manuscript ID: 72.

### Joint-YODNet: A Light-weight Object Detector for UAVs to Achieve Above 100fps

**Vipin Gautam**, Dr. Shitala Prasad, Dr. Sharad Sinha

- Under Review, International Conference on Computer Vision and Image Processing (CVIP) 2023, Manuscript ID: 419.

### AA-PReID: Improved Attention-Aware Person Re-identification

**Vipin Gautam**, Dr. Shitala Prasad, Dr. Sharad Sinha

- Under Review, Winter Conference on Applications of Computer Vision (WACV) 2024, Manuscript ID: 2438.

## Projects & Seminar

### Facial Keypoints Detection,

[December 2022]

In this work I built a CNN to detect key points in the face, For training Kaggle Dataset has been used and Keras has been used to build CNN.

### Machine Learning and Deep Learning Projects,

[May 2022]

Implemented multinomial Naive Bayes classifier on 20 Newsgroups Dataset.

Implemented Linear and Logistic Regression from scratch with LMS and Entropy loss.

Implemented K-Means for clustering from scratch

Implemented Perceptron Algorithm from scratch.

Implemented Neural Network from scratch using Stochastic Gradient Descent and trained it on Boston Dataset.

### Handwritten Alphabets Classifier,

[January 2022]

Implemented Naive Bayes Classifier with Naive Bayes assumption from scratch to solve Handwritten Alphabet classification.

### LZW Compression and Decompression,

[December 2021]

Implemented Lempel–Ziv–Welch algorithm for image compression and decompression.

### IIT Goa Connect Me,

[November 2021]

Developed MEAN-Stack application for IIT Goa social media.

Users with IIT Goa email could only access.

## Skills

<b>Programming Languages</b>	C/C++, Python, Java, JavaScript, TypeScript.
<b>Libraries</b>	Scikit-learn, NumPy, PyTorch, OpenCV, Keras, Nvidia Deepstream, Numpy, Pandas, Angular12.
<b>Software tools</b>	VScode, IntelliJ IDEA, Postman, PyCharm, Git, Docker, Singularity.
<b>Machine Learning, Deep Learning</b>	Linear & Logistic Regression, Naive Baye, K-means, SVM, CNNs, YOLO, Attention Network, and High-Performance Computing (HPC)
<b>Relevant Coursework</b>	Foundations of Machine Learning, Deep Learning for Computer Vision, Probability and Statistics, Fundamentals of Computing Systems Design, Randomized Algorithms, and Information Security.

## Research Experience

### Indian Insititute of Technology (IIT) Goa

[July 2023 – Current]

#### Project Lead, Systems Lab

- Capacity Building For Human Resource Development in Unmanned Aircraft System.
- Leading research and development initiatives to advance computer vision models for deployment on Drone-Based Technology.

**PI: Dr. Sharad Sinha**

## Teaching Experience

### Teaching Assistant CS530, Fundamentals of Machine Learning

[January 2023 – May 2023]

- Under the guidance of Dr. Satyanath Bhat, IIT Goa.
- Responsibilities included grading quizzes, assignments, Conducting Viva, invigilation and maintaining attendance.

### Teaching Assistant CS561, Probability and Statistics

[Aug 2022 – Dec 2022]

- Under the guidance of Dr. Satyanath Bhat, IIT Goa.
- Responsibilities included grading quizzes, assignments, Conducting Viva, invigilation and maintaining attendance.

### Teaching Assistant CS222, Algorithm Design

[January 2022 – May 2022]

- Under the guidance of Dr. Rahul S, IIT Goa.
- Responsibilities included conducting online labs, grading quizzes, and assignments.

### Volunteer Experience

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#### Mentor for Deep Learning Projects(s), Neuromatch Academy(NMA) Summer School

[July, 2023]

Neuromatch Academy is a volunteer-lead organization, run by science enthusiasts from all over the world.

Role- To guide, shape-up, and troubleshoot a DL project that an international team will undertake in the intensive 3-week summer school.

#### Volunteer, National Supercomputing Mission (NSM) workshop at IIT Goa

[July 2022 – July 2022]

The HPC Nodal Center is a center for training and education under the National Supercomputing Mission (NSM) of the Govt. of India. As a Volunteer, I made sure smooth conduct of training programs for students, faculty, and engineers in the domain of HPC under the guidance of Dr. Sharad Sinha

### Industry Experience

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#### Lead, Planning and forecasting, Concentrix

[January 2016 – June 2021]

- Planning & Scheduling.
- Prepared schedules and lead the weekly scheduling performance review and provided recommendations to clients.
- Prepared and published periodic reviews for management.

### Certifications

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- Supervised Machine Learning: Regression and Classification, DeepLearning.AI, Stanford University, By Andrew Ng, September 2022.
- Neural Networks and Deep Learning, DeepLearning.AI, By Andrew Ng, September 2022.
- Applied Accelerated Artificial Intelligence, Certificate of Appreciation, C-DAC, May 2022.
- Introduction to Data Science in Python, University of Michigan, By Professor Christopher Brooks on Coursera, January 2022.
- Certificate of Completion, Angular- The Complete Guide, By Maximilian Schwarzmüller on Udemy, December 2021.
- Fundamentals of Accelerated Computing with CUDA C/C++. Nvidia, October 2021.

### Achievements

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- Secured department **Rank 3** in M.Tech.
- Secured **97 percentile** in Graduate Aptitude Test in Engineering(GATE CSE 2021) amongst **101922** candidates.
- Secured **rank 1** in MCA.

### Extracurriculars & Hobbies

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- Playing Badminton, Trekking, and Reading biographies.

### References

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#### Dr. Sharad Sinha

Associate Professor, Computer Science and Engineering

Indian Institute of Technology, Goa

Email: sharad@iitgoa.ac.in

Website: <https://sharadsinha.wordpress.com/>

#### Dr. Shitala Prasad

Assistant Professor, Computer Science and Engineering

Indian Institute of Technology, Goa

Email: shitala@iitgoa.ac.in

Website: <https://sites.google.com/site/shitalap1/home>