

# SOUMYADEEP BANIK

Mumbai, Maharashtra, India

Field of Interest: Computer Vision, Deep Learning, Image Processing

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## About

Computer Vision Engineer with 4+ years of experience across industry and research. Skilled in pose estimation, person re-identification, multi-view geometry, tracking, segmentation, and spatio-temporal video understanding.

## Experience

### Computer Vision Engineer - *Quidich Innovation Labs*

Building state-of-the-art AI solutions for sports broadcasting

Mumbai

Mar 2024–Present

- **Decision Review Systems (DRS)**

- Developed real-time no-ball and run-out detection pipelines from high-speed cameras (100–120 fps)

- **StiQy**

- Designed real-time (50 fps) perspective tracking pipelines for virtual graphics overlays
  - **AI Keyer** – Built player segmentation pipeline; optimized with CUDA for 90+ fps on RTX 3080 Ti
  - Optimized SOTA segmentation and VLM models for domain-specific deployment

- **HyperView**

- Developing real-time pose estimation algorithms
  - Reconstructed 3D player poses via multi-camera triangulation and integrated BVH into Unreal, Blender, and Maya pipelines

### Computer Vision Developer (Contract) - *AI LENS*

Building a virtual specs try-on platform and recommendation system

Remote

Jan 2024–Present

- Contributed to backend computer vision components of a **virtual try-on system**

- Implemented real-time facial keypoint extraction and glasses projection pipelines with > 95% accuracy

- Delivered end-to-end rendering with ~3s latency on cloud infrastructure; ongoing performance and efficiency optimization

- Project link: [spectsgenie.com](http://spectsgenie.com)

### Junior Data Scientist - *HappyMonk.ai*

Building edge-centric vision models for video surveillance

Bangalore

Dec 2022–Jan 2024

- **Human Activity Recognition**

- Led end-to-end ML pipeline from data collection to edge deployment
  - Used **SLOWFAST** for **spatio-temporal** human activity detection
  - Automated training and inference pipelines for production

- **Space Utilization**

- Implemented image processing methods to detect empty spaces in large inventory areas

- **Object Detection**

- Worked on YOLOv5/YOLOv8 models for face detection, counting, emotion recognition, and fire-smoke detection
  - Collaborated on efficient deployment of models on edge devices

### Indian Statistical Institute (ISI)

Topic - Distributed Cognitive Systems for Healthcare

Kolkata

Project Linked Junior Research Fellow under Prof. Ashish Ghosh

Oct 2021 - Dec 2022

- Conducted research on abnormal activity recognition using RGB and skeletal data
- Studied spatio-temporal modelling of human motion for healthcare applications
- Worked on **graph representation learning** for skeleton-based action recognition
- Analysed motion patterns related to falls, fatigue, and inactivity

Teaching Assistant

Feb 2022 – Jul 2022

- Advanced Image Processing (M.Tech. Computer Science)

## Skillset

Topics of Interest

Pose Estimation (2D, 3D), 3D Vision, Detection, Tracking, Segmentation, HAR

Tools & Techniques

Machine Learning, Deep Learning (CNNs, ViTs), Graph Learning, GNNs

Frameworks

PyTorch, Ultralytics, Flask, FastAPI, AWS Lambda, NVIDIA DeepStream, GStreamer, CUDA, cuDNN

Data Analysis

Pandas, NumPy, Matplotlib, Seaborn

Model Optimization

ONNX, TensorRT

Programming Languages

Python, C, SQL

Technical

Git, Linux, L<sup>A</sup>T<sub>E</sub>X, FFmpeg, Video streaming (RTSP, RTMP, WebRTC, SRT), Docker, MLOps, OpenCV

## Selected Projects

### Quadtree based Image Saliency mapping

Oct 2020-Dec 2020

- Proposed a Quadtree Based approach for getting Salient features from an image which can significantly reduce the computational complexity of a CNN model from  $O(M^2N^2C)$  to  $O(M^2NC)$ .

### Surveying Social Distancing in Aerial Videos using Computer Vision

May 2021-Jul 2021

- Built a web app for monitoring the number of social distancing violations in a video by multiple object tracking
- Worked with a large scale video dataset (Stanford Drone Dataset)
- Used Deep SORT and YOLOv4 for detection and tracking

## Education

### Ramakrishna Mission Vivekananda Educational and Research Institute

Belur, Howrah

M.Sc in Computer Science

2019-2021

### Ramakrishna Mission Residential College (Autonomous)

Narendrapur, Kolkata

B.Sc (Hons) in Computer Science

2016-2019