

SOUMYADEEP BANIK

Mumbai, Maharashtra, India

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

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About

Data Scientist with 3+ years of experience working in Computer Vision & Deep Learning. Actively looking for a role in AI, Data Science, or Computer Vision to contribute effectively into real-world business problems and solutions.

Experience

Computer Vision Engineer - *Quidich Innovation Labs*

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

Mumbai

April 2024-Present

- **Decision Review Systems (DRS)**

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

- **StiQy**

- Designed ground perspective tracking algorithms for real-time (50 fps) virtual graphics overlays on cricket fields, significantly enhancing viewer engagement and experience.

- **HyperView**

- Developing advanced real-time pose estimation algorithms.
 - Reconstructed 3D player poses using 3D triangulation (90% accuracy) with a multi-camera setup, integrating them into 3D graphics and motion builder software (Unreal Engine, Blender, Maya) to enhance realism and analytics in sports broadcasts.

Junior Data Scientist - *HappyMonk.ai*

Building edge-centric vision models for video surveillance

Bangalore

December 2022-January 2024

- **Human Activity Recognition**

- Led the entire project lifecycle, overseeing data collection, preparation, preprocessing, model development to deployment on edge devices
 - Leveraged SLOWFAST network to develop a **spatio-temporal** deep learning model to accurately detect **human activities** within a scene
 - Automated the entire pipeline to streamline the production processes

- **Space Utilization**

- Employed image processing techniques to implement an algorithm to show the empty spaces within an extensive inventory area

- **Object detection**

- Collaborated in multiple projects on developing the dataset, object detection models (e.g. YOLO V5, YOLO v8) across different domains, addressing business problems such as **face detection**, **object counting**, **emotion recognition**, and **fire-smoke detection** etc.
 - Collaborated with the team to efficiently deploy these models on edge devices

Project Linked Junior Research Fellow - *Indian Statistical Institute*

Developing a distributed Cognitive System for Healthcare

Kolkata

October 2021-November 2022

Goal: To recognize abnormal human activities from spatial-temporal data in terms of medical conditions e.g. coughing, falling down, putting hands on chest, belly, head, lying for a long time, etc. Working on human action recognition from RGB video and human skeleton data, targeted at healthcare units.

- Majorly focused on Graph representation learning for Human Skeletons.

Skillset

Topics of Interest

Pose Estimation(2D, 3D), Depth Estimation, 3D point cloud, Object detection, 3D Computer Vision, Human Activity Recognition, Object tracking, Semantic segmentation, OCR(Optical Character Recognition)

Tools & Techniques

Machine Learning(Regression, Classification, Decision Trees, Random Forests, Time series Forecasting and Clustering), Deep learning(DNN, RNN, LSTM, Encoder-Decoder Models), Graph Representation learning, GNN(Graph Neural Networks), Data Structure, Algorithm, OOPS

Frameworks

Pytorch, Ultralytics, Flask API, Fast API, AWS Lambda, Nvidia-Deep Stream, TAO, Cuda, Cudnn

Data Analysis

Pandas, Numpy, Matplotlib, Seaborn

Model Optimization

Onnx, TensorRT

Programming Languages

Python, C, HTML/CSS, SQL

Technical

Git, Linux, L^AT_EX, Docker, ngrok, MLOps, CVAT(annotation tool), OpenCV, Jupyter lab, Google Colab

AI Tools

ChatGPT, Perplexity, Github Co-Pilot, Claude.ai

Projects

SpecsKart - Building a virtual specs try-on platform and recommendation system [In collaboration with AI-LENS]

January 2024-Present

- Projecting the chosen specs onto the user's face using facial keypoint features, accommodating various facial orientations.
- Implementing a recommendation system based on past specs choices.
- **Technologies:** Python3, Matplotlib, MediaPipe, OpenCV, Numpy, Streamlit app, Scipy, Fast api, AWS Lambda

Surveying Social Distancing in Aerial Videos using Computer Vision

May 2021-July 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 i.e. Stanford Drone Dataset (link)
- Used Deep SORT for performing the Multiple object tracking and YOLO-V4 for the detection task
- **Technologies:** Python3, Matplotlib, Seaborn, Pandas, Darknet, Tensorflow, HTML, Flask API

Quadtree based Image Saliency mapping

October 2020-December 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 $O(M^2NC)$.
- **Technologies:** Pytorch, Python3

Video Steganography using LSB Technique by a Unique Frame Selection Method

March 2019-May 2019

- Proposed a unique frame selection method that takes the first number from the pseudo-random number sequences generated by our modular function (a Linear congruential generator) by taking a seed value as the secret key defined by the sender and increased the security.
- **Technologies:** OpenCV, Numpy, Pandas, Python3, Anaconda

Education

Ramakrishna Mission Vivekananda Educational and Research Institute

M.Sc in Computer Science

Belur, Howrah

2019-2021

Ramakrishna Mission Residential College(Autonomous)

B.Sc(Hons) in Computer Science

Narendrapur, Kolkata

2016-2019

Misc.

Languages- Bengali, Hindi, English

Interests- Photography, Graphics Design, Illustration, Music

Experience- Organized ENVISION'19, a first-ever tech event in RKMRC, Narendrapur by Computer Science department