Aman Goyal

Email | Linkedin | Website | GitHub

Education

Carnegie Mellon University — Pittsburgh, PA
Master's in Information Systems Management — *August 2023 – December 2024*

National Institute of Technology, Kurukshetra — Kurukshetra, India
Bachelor of Technology in Computer Engineering — *July 2017 – June 2021*

Publications

- *Towards an AI Framework for Scalable Compliance Monitoring in Regulated Sectors.*
  Aman Goyal, J Pendyala, R Bhat.
  Accepted in ICCCNP 2025
- *System and Method for Detecting and Tracking a Two-Wheeler Vehicle Traffic Violation Using a Deep Learning Model.*
  RK Sarvadevabhatla, **Aman Goyal**, R Saluja, D Agarwal.
  US Patent App. 18/131,765
- *Detecting, Tracking and Counting Motorcycle Rider Traffic Violations on Unconstrained Roads*
  Aman Goyal*, Dev Agarwal*, Anbumani Subramanian, C. V. Jawahar, Ravi Kiran, Rohit Saluja.
  Published in CVPR Workshop (UG2+ challenge)
  **indicates equal contribution*
- *Multimodal Emotion Recognition in Polish.*
  Kritika Rupaulhia, **Aman Goyal**, Aman Saini, Akshay Shukla, Sridhar Swaminathan.
  Published in IEEE International Conference on Multimedia Big Data (BigMM), 2020, New Delhi, India

Research Experience

The Trade Desk — February 2025 - Present
Product Manager — *Seattle, WA*

- Leading intiatives in Pharma vertical to drive it to GA to enable a spend of $1B Spend.
- Leading the Trust and Safety team in mapping all platform features to data usage accurately, a critical effort for the long-term safety and scalability of the product.
- Collaborating with Legal, Engineering, and Product teams to ensure comprehensive and accurate feature mapping and compliance.
- Driving initiatives that align product features with data usage requirements, ensuring the platform's sustainability and security in the long run.

The Trade Desk — May 2024 - August 2024
Product Management Intern — *Seattle, WA*

- Developed an end-to-end MVP for optimizing cloud infrastructure costs by sending actionable alerts.
- Interviewed 35 folks and drove improvement of the data catalog tool, saving 1000+ hours.
- Performed extensive analysis over jobs in Spark and Airflow, estimating savings of $8M+ from migration to Spark S3 and Airflow 2.

Emerging Systems Lab, Intel — August 2022 – May 2023
AI Research Engineer — *Bengaluru, India*

- Improved the pretrained model to AutoQ - mixed precision finetuning based model by 5% for the Intel Innovation Event 2022 within just 2 weeks of joining.
- Performed smooth codebase migration of BootstrapNAS and other models from Nvidia to Habana based GPUs for a demo in the Intel Innovation Event 2022.
- Optimized temporal convolutional networks by it's integration with BootstrapNAS for image classification and time series analysis based datasets. Achieved a 50% reduction in MACs with 2.5 times improvement in accuracy.
- Leading a pruning based project which automatically determines when,where and how to prune a neural network. Performed a comprehensive literature review of existing structured pruning strategies and reproduced their experimental findings. As a result, also proposed various methodologies. This project is being carried out under the guidance of Nilesh Jain and Pablo Munoz.
- **Proposed techniques are intended to be submitted to ICML 2023**.

Xulab, Carnegie Mellon University June 2021 – February 2022
Research Intern *Pittsburgh, USA*

- Worked under the guidance of Prof. Min Xu and Dr. Sima Behpour on projects based on continual learning.
- Implemented several state-of-the-art methods such as *Dynamically Expandable Networks*, *Orthogonal Weight Modification* and *Layerwise Optimization by Gradient Decomposition* across various datasets and environments .
- Formulated and implemented a novel regularization based approach for continual learning which uses principal vectors to reconstruct the orthogonal projection matrix.
- **Our work is currently under review at CVPR 2023**.

Optimization and Trustworthy ML Group, Michigan State University March 2022 – July 2022
Research Intern *East Lansing, USA*

- Worked with Prof. Sijia Liu on compression of object detection and tracking models for autonomous vehicles.
- Implemented a lightweight detection and tracking backbone for integration with state-of-the-art method *QDTrack*.
- Achieved a 30% increase in accuracy and a 60-fold reduction in size as compared to the *QDTrack* model variants with *Resnet-50* and *Resnet-101* backbones. All models were trained on *BDD100K Detection* dataset.

Centre for Visual Information Technology, IIIT Hyderabad February 2021 – September 2021
Applied Research Fellow, Mobility Group *Hyderabad, India*

- Developed a novel helmet and triple riding violation detection solution for working on unconstrained roads. This project was carried out under the guidance of Prof. Ravi Kiran and Prof. C. V. Jawahar.
- Designed and implemented a pre-processing pipeline for the Indian Driving Dataset. Additionally, fixed a bug in the IDD dataset and contributed the codebase of the pipeline's various components, due to which was provided the access to upload it to IDD github repository.
- Developed the helmet violation detection solution using *YOLO*v4 model which achieved an mAP of 87%.
- Proposed a novel solution to detect and track triple riding violations using a trapezium regressor. The trapezium shaped bounding boxes were constructed over the rider-motorcycle instances. A precision of 85% was achieved on a diversified test set.
- **Our work was published at CVPR Workshop (UG2+ challenge).**
- **A patent was also filed which has been approved by the Indian IP Office for its international filing.**

Bennett University May 2019 - June 2019
Research Intern *New Delhi, India*

- Worked under the guidance of Dr. Sridhar Swaminathan on a multimodal human emotion recognition system.
- Developed emotion recognition solution through *LSTM* based classifier for body language, facial landmark detection using *OpenCV* library and *Librosa* library for audio modality. Additionally, deployed the model as an Android app for real-time emotion recognition. It achieved an accuracy of 95%.
- **Our Work was published at IEEE BigMM 2020**.

Other Experience

Nayan Technologies January 2020 - August 2020
Deep Learning and Computer Vision Intern *New Delhi, India*

- Developed and deployed a cost efficient real-time traffic light recognition solution which reduced the organization's expenditure on data annotation by 2.5 times.
- Developed various solutions including vehicle pose, vehicle-camera distance, and trajectory estimations, all of which were part of project which was **patented** and **deployed** by **Dubai police at driving test yards across UAE.**
- Spearheaded and developed several multiple deep learning projects and pipelines such as yard segmentation, lane occlusion recognition, overloaded vehicle recognition and others.

Omdena May 2020 - June 2020
Machine Learning Engineer *Remote*

- Led a team of 10 collaborators for data analysis and visualization gathered from Google trends for various domestic violence related terms on 10 Indian languages.
- **Successful in influencing the Ministry of Affairs to prioritize domestic violence and issue guidelines** due to the various insights gathered by the team, which were representative of various socioeconomic classes.

NIT Kurukshetra August 2020 - December 2020
Teaching Assistant *Kurukshetra, India*

- Taught several machine learning concepts to 240 students during the semester as part of the course content. Also conducted various lab sessions and prepared it's assignments.

Projects

Intrusion Detection in Low Light Scenarios | *Computer Vision*

- Developed a video surveillance based solution for low light scenes which were processed using stacking and averaging techniques. Deep learning models *YOLO*v4 and *HRNet* were used for intruder detection and pose estimation.

Vehicle Parking Occupancy Detection | *Computer Vision*

- Implemented a parking occupancy status detection solution using *YOLO*v3 model, homography estimation and *Point Polygon Test*. Also wrote a detailed blog on it .

Deep Learning based COVID-19 classifier | *Deep Learning*

- Developed an easily deployable COVID-19 classifier which performs binary classification on X-ray images. Achieved an accuracy of 99% on the *MobileNet* model with a training set of just 50 images.

Achievements

- **OpenCV AI Competition 2021**: Spearheaded team which was shortlisted as **Finalists** among **1600 applicant teams across the world** for the proposing a visually impaired assistance solution.
- **EYRC-2019**: Led college team to the semi-finals in Eyantra 2019 competition. The project was based on application of drones in rescue and search operations.

Leadership And Volunteering

- **Google AI Explore ML Program**: Successfully conducted and taught in **10 Deep Learning sessions**. These were attended by **200+ students from various backgrounds** across the university.
- **KAIR**: Founded the first ever AI research club of the institute - Kurukshetra AI Research Club.