ANUBHAV

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EDUCATION

University of Maryland, College Park, MD
Ph.D., Computer Science, Jan'23-Present

University of Maryland, College Park, MD
MS, Computer Science, Jan'21-Dec'22

Indian Institute of Technology (IIT), Delhi, India
Bachelor of Technology, Electrical Engineering (Minor: Computer Science), May'10

SKILLS

Programming Languages:	(Advanced)	Python
	(Intermediate)	SQL
	(Advanced Beginner)	Golang, C/C++, Javascript, Kotlin

Frameworks, and tools:	(Proficient)	PyTorch, AWS infrastructure
	(Familiar)	Spark, Hadoop

EXPERIENCE

Research Assistant
Dept. of Computer Science, University of Maryland, College Park, Summer'21 - Present
- Working with Prof. Abhinav Shrivastava on problems in unsupervised learning, open set recognition in computer vision, and image retrieval.

Applied Scientist Intern (part-time)
Amazon, Remote, Oct'22 - Dec'22
- Investigated the visual geolocalization problem
- Formulated the problem with respect to product constraints, and wrote a research proposal
- Working on a similar idea as part of my own research

Applied Scientist Intern
Amazon, Bellevue, WA, Jun'22 - Aug'22
- Worked on edge-based computer vision product focusing on objection detection
- Built a prototype model and pushed it to production for field trials
- Received a return offer for full-time position

Data Scientist
Swiggy (BundlTechnologies), Bangalore, India, Sep'20 – Jan'21
- Deep learning-based road network extraction from satellite imagery
- Extracted building footprints at scale from OSM and constructed Point of Interest Polygons
- Work accepted at LocalRec-2021

Senior Research Engineer

Netradyne Technologies, Bangalore, India, Jun'17 – Aug'20
- Object Detection and Recognition
    - o   Curated the datasets and trained the models from the ground up for different geographies
    - o   Worked on FasterRCNN, SSD, MobileNets
- Optimization and Engineering – model acceleration and compression for on-device analytics
- Infrastructure Development – Primary developer for analytics video data lake and model evaluation tool

Machine Learning Engineer

Silversparro Technologies, Gurgaon, India, Dec'14 – May'17

Business Analyst

Capital One, Bangalore, India, Feb'12 – Aug'12

PROJECTS

PatchGame

University of Maryland, College Park
- Studied a referential game (a type of signaling game) where two agents communicate with each other via a discrete bottleneck to achieve the goal of discovering important image patches
- Proved that it was indeed possible for the two agents to develop a communication protocol without explicit supervision
- Possible applications: speeding up recent Vision Transformers by using only essential patches and as pre-training for downstream recognition tasks

Open World Evaluation

University of Maryland, College Park
- Organized a long-term study on a new evaluation paradigm for open-world problems
- Proposed a firewalled system between algorithm developers and dataset creators and studied challenges in setting up such a paradigm
- Work under submission at a computer vision conference

Model Evaluation Tool

Netradyne Technologies, Bangalore, India
- Designed the backend schema and conceptualized the API interface
- Built features to zero in on systemic faults in the models w.r.t. to particular lighting, weather, or object dynamic and used this to optimize data collection effort and set up continuous learning
- Possible applications: assisting scientists in seeing failure modes in a model, reducing the model churn time, an internal model and data tracking mechanism

PAPERS

- **NeurIPS'21** PatchGame: Learning to Signal Mid-level Patches in Referential Games
  Kamal Gupta, Gowthami Somepalli, Anubhav Gupta, Vinoj Jayasundara, Matthias Zwicker, Abhinav Shrivastava
  Available at: https://arxiv.org/abs/2111.01785
- **LocalRec'21** Mining Points of Interest via Address Embeddings: An Unsupervised Approach
  Abhinav Ganesan, Anubhav Gupta, Jose Mathew
  Available at: https://arxiv.org/abs/2109.04467

PATENTS

- **US WO 2019/075341 Al:** Detection of driving actions that mitigate risk

WORKSHOPS

- **Dealing With Novelty in the Open Worlds, WACV 2023, Hawaii:** Co-organizer
- **Open World Vision, CVPR 2022, New Orleans:** Member, Organizing Committee
- **Dealing With Novelty in the Open Worlds, WACV 2022, Hawaii:** Co-organizer