

KAMAL GUPTA

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RESEARCH INTERESTS

My research is primarily in Computer Vision, Graphics, and Language. I am interested in learning from Internet-scale data (image/text/video) and building tools to empower artists to create 2D/3D visual content seamlessly.

EDUCATION

University of Maryland, College Park

Aug. 2018 - Present

Ph.D. in Computer Science (4.0/4.0), Kulkarni fellow, Dean's fellow, Outstanding GRA Award

Advisors: Abhinav Shrivastava, Larry Davis

Thesis: Compositional generative modeling for visual data

Indian Institute of Technology Delhi

Aug. 2007 - Dec. 2012

Bachelors + Masters in Electrical Engineering (8.6/10.0)

Advisor: Sanjiv Singh (Carnegie Mellon University)

Thesis: Pose Estimation for a Micro-Aerial Vehicle

SELECTED PUBLICATIONS AND PATENTS

Visit Google Scholar [tC3td8cAAAAJ](https://scholar.google.com/citations?user=tC3td8cAAAAJ) for the complete list (* denotes equal contribution)

- ASIC: Aligning Sparse in-the-wild Image Collections *Under Review* [web, code]
K. Gupta, V. Jampani, C. Esteves, A. Shrivastava, A. Makadia, N. Snavely, A. Kar
- Teaching Matters: Investigating the Role of Supervision in Vision Transformers *Under Review* [web, code]
M. Walmer*, S. Suri*, **K. Gupta**, A. Shrivastava
- LilNetX: Lightweight Networks with EXtreme Compression & Structured Sparsification *ICLR 2023* [web, code]
S. Girish, **K. Gupta**, S. Singh, A. Shrivastava
- Neural Space-Filling Curves *ECCV 2022* [web, code]
H. Wang, **K. Gupta**, L. Davis, A. Shrivastava
- PatchGame: Learning to Signal Mid-level Patches in Referential Games *NeurIPS 2021* [web, code]
K. Gupta, G. Somepalli, Anubhav, V. Jayasundara, M. Zwicker, A. Shrivastava
- LayoutTransformer: Layout Generation and Completion with Self-attention *ICCV 2021* [web, code]
K. Gupta, J. Lazarow, A. Achille, L. Davis, V. Mahadevan, A. Shrivastava
- The Lottery Ticket Hypothesis for Object Recognition *CVPR 2021* [web, code]
S. Girish*, S. Maiya*, **K. Gupta**, H. Chen, L. Davis, A. Shrivastava
- Improved Modeling of 3D Shapes with Multi-view Depth Maps *3DV 2020* [web, code]
K. Gupta*, S. Reddy*, K. Shah*, A. Shrivastava, M. Zwicker
- PatchVAE: Learning Local Latent Codes for Recognition *CVPR 2020* [web, code]
K. Gupta, S. Singh, A. Shrivastava
- Global Pose Estimation with Limited GPS and Long Range Visual Odometry *ICRA 2012* [web]
J. Rehder, **K. Gupta**, S. Nuske and S. Singh
- A Compression Scheme for Handwritten Patterns Based on Curve Fitting *ICDAR 2011* [web]
K. Gupta*, M. Bansal* and S. Chaudhury
- Applying Multi-Dimensional Variables to Determine Fraud *USPTO 16/426826*, 2019
K. Gupta, V. Jain
- Systems and methods for Updating Fraud Detection Variable *USPTO 15/258880*, 2018
K. Gupta, V. Jain
- Systems and methods for customized real time data delivery *USPTO 14/961614*, 2015
S. Sanyal, S. Purkayastha, T. Choudhuri, A. Choudhary, V. Grover, M. Naeem, P. Mehta, **K. Gupta**, A. Agarwal

WORK EXPERIENCE

Google AR & Google Research (co-hosted)

May 2022 –

Research Intern

San Francisco, CA (Remote)

- 3D object reconstruction from in-the-wild Image Collections

NVIDIA AI

May 2021 – Aug. 2021

Research Intern

Santa Clara, CA (Remote)

- Generative modeling of textured meshes

Amazon AWS

Research Intern ([web](#))

May 2019 – Aug. 2019
Pasadena, CA

- Generative modeling of layouts for diverse domains such as 3D objects, Wireframes, Documents, etc.

NetraDyne

Staff Research Engineer

Mar. 2017 – Aug. 2018
Bengaluru, India

Netradyne is a Stanford/Qualcomm alumni startup providing ADAS devices for commercial vehicles. Shipped

- Distracted (texting, eating, drinking etc.) + drowsy driving detection pipeline for driver safety
- DriverI Fleet Safety and Coaching Platform to ingest and analyze millions of driving miles

Poolka Technologies

Cofounder, CTO

Apr. 2016 – Feb. 2017
Bengaluru, India

- Built [Fairi](#), a fashion assistant app that provides clothing recommendations based on social media trends and users' existing wardrobe. (Pose estimation, Clothing segmentation, Graph Convolutions, NLP)
- Selected for **Microsoft Bizspark** and **IBM Global Entrepreneur** Program (>\$20000 cloud credits per year)

Big Data Labs, American Express

Research Engineer, Risk & Information Management

July 2013 – Mar. 2016
Bengaluru, India

- Large scale recommendation systems, Geometric deep learning on financial data.
- **Platinum Genius Medal** - Systems and methods for customized real time data delivery Dec. 2015
- **Trainer of the Quarter** - Hadoop course for >200 AmEx employees in NYC, Gurgaon, Bangalore Dec. 2014
- IMS Hackathon (Winner 2015, Runner-up 2014), RIM InnoVision Challenge (Runner-up 2013) 2013-2015

National ICT Australia

Research Intern, *Networks Research Group*

Jan. 2013 – June 2013
Sydney, Australia

- Large scale study of location-based communities in social discovery networks (173 *K* communities, 6.8 *mn* users)

Robotics Institute, Carnegie Mellon University

Research Intern

June 2011 – June 2012
Pittsburgh, PA

Visual Yield Estimation in Vineyards ([web](#))

- Developed an approach to predict vineyard yields automatically and non-destructively with cameras

Master's Thesis: Pose Estimation for a Micro-Aerial Vehicle (MAV) ([web](#))

- Estimated global pose of MAV using stereo visual odometry fused with infrequent GPS measurements

Industrial Technology Research Institute (ITRI Taiwan)

Research Intern

May 2010 – July 2010
Hsinchu, Taiwan

- Designed an (SVM based) algorithm for detection of multiple vehicles in dim light for autonomous cars

VOLUNTEER/DEI INITIATIVES

- **Graduate Student Mentor:** [CVPR Academy](#) for first-time CVPR attendees 2022
- **Organizer:** Co-running [SIGGRAPH RCDC](#) mentorship program for Graphics graduate school applicants 2021-
- **Instructor:** [AI4ALL](#) summer program for high school students 2020
- **Reviewer:** Computer Graphics - SIGGRAPH 2022. Computer Vision - ECCV 2022. CVPR 2022*, 2021. ICCV 2021. Machine Learning - NeurIPS 2022. ICLR 2022. (* denotes Outstanding Reviewer Award)

MISCELLANEOUS

- Outstanding Research Assistant Award by the Graduate School, University of Maryland ([web](#)) 2022
- Outstanding Reviewer, CVPR ([web](#)) 2022
- Kulkarni Research Fellowship ([web](#)) 2020
- Dean's fellowship for outstanding academic achievement 2018-20
- **Talks**
 - Networks Research Group, NICTA: **Exploring location based social discovery networks** May 2013
 - Navigation Group, Robotics Institute, CMU: **Error Modeling in Visual Odometry** May 2012
- **Coordinator:** [Field Robotics Seminar Committee](#) CMU 2011-12
- **Coordinator:** [Robotics Club](#) IIT Delhi 2008-10
- Master's Research Scholarship by Ministry of Human Resources and Development, Govt. of India May 2011
- CBSE Merit Scholarship for All India Rank 38 (600,000 appeared) in AIEEE 2007
- National top 1% (40,000 appeared) in Physics Olympiad and Chemistry Olympiad 2006
- National Talent Search Exam Scholarship by Govt. of India 2005