Maitrey Gramopadhye

maitreygram.github.io | +1 (998) 432-8186 | maitrey@cs.unc.edu
https://www.linkedin.com/in/maitrey-gramopadhye | Google Scholar

Education

University of North Carolina, Chapel Hill *(Aug 2023 - present)*
Ph.D. candidate in Computer Science. Advisor: Dr. Daniel Szafir

University of North Carolina, Chapel Hill *(Aug 2021 - Aug 2023)*
Master of Science in Computer Science

Indian Institute of Technology, Bombay, India *(July 2016 - July 2020)*
Bachelor of Technology in Computer Science, with Honors

Research and Publications

- **Generating Executable Action Plans with Environmentally-Aware Language Models**. **Maitrey Gramopadhye** and Daniel Szafir. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2023*

  In this paper, we propose an approach to utilise **large language models** and convert high level tasks to environmentally-aware action plans that can be directly executed by intelligent agents. Our approach involves using the agent's environment to provide **situational awareness**.

- **Assessing the Impact of VR Interfaces in Human-Drone Interaction**. **Maitrey Gramopadhye**, Arran Zeyu Wang, Leonard Shearer, Tony Qin and Daniel Szafir. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2023*

  In this paper, we designed a novel VR interface to control a 6-DOF drone and explored the impact and differences of VR and 2D interfaces on layman human-drone interaction.

- **CuRL: Coupled Representation Learning of Cards and Merchants to Detect Transaction Frauds**. **Maitrey Gramopadhye***, Shreyansh Singh*, Kushagra Agarwal, Nitish Srivasatava, Alok Singh, Siddhartha Asthana and Ankur Arora. *Artificial Neural Networks and Machine Learning – ICANN 2021*

  In this paper, we propose to generate contextual embeddings for credit cards and merchants by capturing the **cross-interactions** in a bipartite graph of the payment entities. The proposed approach is faster and outperforms many SOTA representation learning algorithms.

- **3D Reconstruction in Cryo-Electron Microscopy**. **Maitrey Gramopadhye**, Ajit Rajwade. *Undergraduate Thesis, 2020*

  We built a pipeline for reconstructing 3D structures of viruses from 2D tomographic projections. We extended prior work for estimating projection angles by also estimating and correcting for translation errors in electron micrographs, thus adding (2+3) degrees of freedom to be estimated.

Industry Experience

ASSOCIATE ANALYST
AI Garage, Mastercard India *(Aug 2020 - Aug 2021)*

- Worked on **representation learning** for credit cards and merchants to detect transaction fraud
- Built high precision models to predict whether transactions would **clear** as well as properties associated with clearing
- Developed a **TextVQA** inspired solution for the **Product Pricing Challenge, RetailVision, CVPR 2021** for detecting and matching price tags to products, in images of supermarket shelves

MONOCULAR 3D OBJECT DETECTION
Samsung Research Institute, Bangalore | Research Internship *(May 2019 - July 2019)*

- Worked in the **Advanced Technology Lab** at Samsung Research Institute, Bangalore
- Built real-time monocular **3D object detection** model in Pytorch for mobile phones
- Received a job offer for outstanding performance during the internship

REAL-TIME KINEMATIC POSITIONING
CarSense - formerly Carnot | Summer Internship *(May 2018 - July 2018)*

- Developed a selection type **Network based Real-Time Kinematic (RTK)** Positioning System
- Used Skytraq **NS-HP Module** to communicate with satellites and get location accurate upto **3 cm**
- Setup RTK basestations to broadcast **correction data** to rovers, reliable upto **10 kms**

Selected Technical Projects

IIT-B MARS ROVER TEAM
Student Technical Team, IIT Bombay *(May 2017 - July 2020)*

- The IIT Bombay Mars Rover Team builds rovers capable of traversing and conducting operations and experiments in Mars like terrain, for competing in the University Rover Challenge, Mars Society
- Intensively worked in the field of **Computer Vision** for autonomous tasks performed by the rover
- Worked on **Autonomous Object detection** task by implementing a hybrid method, using conventional CV approach followed by deep learning, to get real-time detection from a video stream
- Worked on **Autonomous Obstacle Avoidance** task of the rover, using data from **GPS** and **LiDAR**

Teaching and Mentoring Experience

GRADUATE TEACHING ASSISTANT
Department of Computer Science, UNC Chapel Hill *(Aug 2021 - May 2022)*

- TA for COMP 523 - Software Engineering Lab in Spring 2022, taught by Prof. David Stotts
- TA for COMP 475 - 2D Computer Graphics in Fall 2021, taught by Prof. Mike Reed
- Duties included regular meetings with students for tracking their progress, clarifying doubts with the course content, helping debug code in C++, python etc.

SOFTWARE SUBSYSTEM HEAD
Mars Rover Team, IIT Bombay *(May 2019 - July 2020)*

- **Head** of **Software Subsystem** of the IIT-Bombay Mars Rover Technical Team
- Responsible for supervising the team's progress on the software required for **URC 2020**
- The team participated in University Rover Challenge (URC) 2018 and stood 31st out of 95 teams

INSTITUTE STUDENT MENTOR
Institute Student Mentorship Program, IIT Bombay *(May 2019 - July 2020)*

- Responsible for guiding a group of 12 undergraduate freshmen for the academic year
- Providing counsel and mentoring them about any academic or personal problem

Scholastic Achievements

- Secured an All India Rank of **433** in JEE-Advanced out of 150,000 candidates *(2016)*
- Recipient of the KVPY Fellowship with an All India Rank of **596** *(2015-2016)*
- Achieved **99.34** percentile in JEE-Main out of 1.2 million candidates *(2016)*

Key Courses Undertaken

Computer Science - Computer Vision, Advanced Image Processing, Foundations of Intelligent and Learning Agents, Automatic Speech Recognition, Digital Image Processing, Computer Networks, Operating Systems, Computer Architecture, Data Structures and Algorithms, Data Analysis
Miscellaneous - Linear Algebra, Differential Equations, Calculus, Quantum Physics, Economics