

PRANAV GUPTA

Davis, California

✉ pgpt@ucdavis.edu |  in/pranavgupta0001 | ☎ 530270 5552 | 🌐 www.pranavgupta0001.com

SUMMARY

My overarching goal is to remain a lifelong learner and contributor to scientific advancement. I excel at fostering cross-disciplinary collaboration, engaging with experts from diverse domains to address complex research challenges. My greatest strength lies in my curiosity and passion for learning, constantly exploring new ideas, refining my skills, and developing innovative techniques that expand theoretical understanding. I am deeply grateful to the mentors and peers whose inspiration, generosity, and dedication have profoundly shaped my academic journey and research pursuits.

EDUCATION

University of California (UC), Davis, USA	Ongoing
PhD in Computer Science - Fulbright scholar. Advisor: Prof. Ilias Tagkopoulos	GPA: 3.95/4.00
York University (YU), Toronto, Canada	Completed
Bachelor of Science, Physics with Honours & Computer Science- First Class with Distinction	GPA: 3.96/4.00
Exchange semester at Arizona State University, Phoenix, USA as part of Killiam fellowship.	

EXPERIENCE

AI Institute for Next Generation Food Systems AIFS University of California, Davis	Davis, CA
Artificial Intelligence Researcher	Since 2024
- Developed an innovative, end-to-end machine learning pipeline integrating chemical biology pathway analysis and advanced algorithms to predict food bioactivity from chemical composition. - Architected a multimodal ReAct-based system by collaborating with Digital Green company to integrate the APIs (now MCPs) tools, enabling dynamic API usage such as CropManage. - Developed the knowledge graph by fine-tuning LLM for literature data extraction and databases relationship mapping.	
Department of Computer Science University of California, Davis	Davis, CA
Teaching Assistant	2025
- Led weekly discussions and few lectures for 135 students in ECS124 - Bioinformatics and 152 in ECS171 - Machine Learning. - Designed test suites and graded assignments regarding ML, sequence alignment, BLAST, and Hidden Markov Models.	
HALLiVE Deloitte Canada	Toronto, Canada
Data Analysts	2023
- Led advanced statistical analyses for large-scale financial datasets from 17 global insurance banks. - Effectively communicated complex data analyses to stakeholders, presenting findings at two industry seminars.	
Faculty of Science, York University	Toronto, Canada
PASS Leader - Tutor	2023
Provided academic support for undergraduate physics courses, guiding 253 students in understanding complex mathematical concepts and advanced problem-solving techniques essential for AI model comprehension.	
Bethune College, York University	Toronto, Canada
Website Developer	2022
Implemented cost-effective measures through transitioning web development services, resulting in a 15% reduction in operating costs and a 25% increase in website purchases, demonstrating the effectiveness of data analytics for business solutions.	

PROJECTS

Understanding Readmission Risks using Explainable Framework - GitHub	UC Davis, Health
Keywords – Explainable AI, Deep Learning, Healthcare	2024
Developing explainable ML models predicting hospital readmissions using data from 130 hospitals.	

- Implemented Explainable Boosting Machine and Neural Networks for predictive analysis.
- Applying SHAP and LIME for transparent and actionable AI recommendations.

GCN-TULHOR – Trajectory-User Link - [PDF](#)

YU, Toronto

First Author – Under Review at [ACM Journal](#) | **Keywords** – GCN, Data Mining, Trajectory Analysis

2024

- Designed a novel data representation method using Graph Convolution Networks (GCNs) with regular hexagonal tessellations to address data sparsity and model skewness challenges in trajectory-user linking, under the guidance of [Prof. Manos Papagelis](#).
- Achieved a 2-5% performance improvement across six datasets compared to state-of-the-art approaches through extensive ablation studies.
- Received LURA and NSERC awards for innovative AI and Data Mining research.

Dark Matter Galaxy Analysis

Goethe University, Germany

Keywords – Scientific MCMC model

2024

- Participated in the MAGNIF program (*JWST Cycle-2*), applying advanced grism-based dynamical modeling to identify a rotating disk at $z=8.34$ from [O III] emission data in JWST NIRCam. Provided evidence for rotating gaseous disks 600 million years post-Big Bang.
- Performed forward modeling of the 2D spectrum, estimating rotation velocities and deriving the dynamical mass.

LIG From Different Polymer Precursors Predicted Using ML

YU, Toronto

First Author – Under Review at [IJAMD Journal](#) | **Keywords** – ML, BERT Materials Science

2023

- Collaborated with Prof. [Gerd Grau](#), Prof. [Dazhong Wu](#) to apply machine learning for predicting and tailoring the properties of laser-induced graphene (LIG), a material poised for next-generation electronics.
- Pioneered a novel approach using Google BERT models to transform complex polymer molecular structures into a format suitable for machine learning analysis, achieving a 23% improvement in predicting key LIG properties compared to prior methods.
- Presented results at MRS Washington conference, selected for prestigious MLSS Okinawa and received media attention ([Video](#)).

Learning Cosmological Parameters with Machine Learning – [GitHub](#)

Université de Montréal, Canada

Keywords – Probability diffusion model

2023

- Employed a Score-based diffusion model with a U-Net architecture to infer cosmological parameters and map dark matter in N-body simulations to the full matter density from hydro simulation.

OTHER SKILLS

- **Linguistics:** English(Advance), Hindi(Advance), Punjabi(Advance), French(Beginner)
- **Hobbies:** Lawn Tennis (High School National Player), Skydiving (certification), Piano & Guitar (Ongoing)
- **Robotics - Electro-Mechanical Engineering:** Centennial College, Canada. (Diploma Completed)