

PRANAV GUPTA

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EDUCATION

York University (YU) , Toronto, Canada <i>Bachelor of Science, Physics with Honours & Computer Science</i>	2021 - Expected May 2024 GPA: 3.96/4.00
Arizona State University (ASU) , Phoenix, America <i>Exchange semester - Fulbright scholarship as part of the Killam Fellowship Program.</i>	Jan. 2024 – May 2024

EXPERIENCE

Undergraduate Research Assistant Data Mining Lab, YU	September 2023 – Present
<ul style="list-style-type: none">Focused on a project on trajectory-user linking (TUL) using deep learning models, addressing challenges like data sparsity and model skewness under the guidance of Prof. Manos Papagelis. Developed a novel approach using regular tessellation in hexagons to enhance data representation and generalization.Tested Large Language Models for TUL, conducting extensive performance comparisons with existing baseline methods.Awarded: Lasonde Undergraduate Research Award (LURA) for exceptional potential in the field of AI and Data Mining.	
Machine Learning Summer Researcher E-AM Lab, YU	May 2023 – August 2023
<ul style="list-style-type: none">Implemented and fine-tuned advanced machine-learning algorithms to predict the properties of laser-induced graphene.Pioneered the transformation of polymer molecular structures into analytical data using Google BERT models under the guidance of Prof. Gerd Grau, Prof. Dazhong Wu.Awarded: Natural Sciences and Engineering Research Council of Canada (NSERC) undergraduate research award. Showcased research via a poster presentation at a Lasonde Summer Research conference and received media attention. (Video, Poster)	
Data Analysts HAIIVE Deloitte Canada	Feb 2023 – May 2023
<ul style="list-style-type: none">Led research under advisors Puneet Bassi, Prof. Mir Ahasan Kabir, concentrating on advanced statistical analyses to extract insights from large datasets, especially in the context of financial reports from global insurance banks.Effectively communicated complex data analyses to stakeholders, presenting findings at two industry seminars.	
PASS Leader - Tutor Faculty of Science, YU	July 2022 – April 2023
<ul style="list-style-type: none">Provided academic support for undergraduate physics and math courses, where I guided students in understanding complex mathematical concepts and advanced problem-solving techniques essential for AI model comprehension.Led engaging and interactive weekly tutorial sessions and established strong relationships with students and professors.	
Website Developer Bethune College, YU	Oct 2021 – June 2022
<ul style="list-style-type: none">Implemented cost-effective measures through transitioning web development services, resulting in a 15% reduction in operating costs and a 25% increase in website purchases, proving my effectiveness in utilizing data analytics for business solutions.	

RELEVANT COURSEWORK

Introduction to AI and Logic Programming , ASU	Spring 2024
Time Series and Spectral Analysis; Data Mining; Classical Mechanics , YU	2023
Experiential Learning Opportunity through Research and Exchange (EXPLORE) , Goethe University, Germany	Full Year 2023

CERTIFICATIONS:

Machine Learning , Coursera, Andrew Ng	July 2022
TensorFlow Developer Professional Certificate , Coursera, Laurence Moroney	June 2023

TECHNICAL STRENGTHS

Languages: Python, Julia, Java, JavaScript, R, C, C++, SQL, HTML, CSS, English, Hindi, Punjabi
Data Science Tools: TensorFlow, PyTorch, Scikit-Learn, Pandas, NumPy, Matplotlib, Seaborn, MATLAB
Others: AWS, GCP, Docker, MySQL, Big Query, MongoDB, GIT, React
Skills: Machine Intelligence + Mathematics, Statistics, Signal Processing

PROJECTS

Laser-Induced Graphene (LIG) From Different Polymer Precursors Predicted Using Machine Learning | *Work in progress*

Pranav Gupta, Dazhong Wu, Gerd Grau

Learning Cosmological Parameters with Machine Learning | *U-Net, Diffusion Model* | [\[code\]](#)

- Utilized a Score-based diffusion model and U-Net architecture to infer cosmological parameters and map dark matter in N-body simulations to the full matter density from hydro simulation.
- Implemented Bayesian Neural Networks (BNN) and Approximate Bayesian Computation (ABC) to measure the uncertainty of the model, reflecting a comprehensive approach to uncertainty quantification in neural networks.
- Processed and analyzed data from the CAMELS suite of simulations, demonstrating data wrangling and preprocessing skills.

Handwritten Digit Recognition | *Python, Pygame, Numpy, Keras* | [\[code\]](#)

- Developed a neural network model to recognize handwritten digits, highlighting expertise in pattern recognition.
- Devised a system to allow continuous writing within the same Pygame window, while dynamically inserting live predictions next to the input, showcasing my proficiency in real-time data handling and prediction.

AWARDS AND RECOGNITIONS

- Awards and Grants:
 - 2023 Fulbright Canada Killam Fellowship
 - 2023 Emeritus Professors' Prize in the Department of Physics and Astronomy, York University
 - 2023 LURA research award
 - 2023 NSERC Undergraduate Student Research Award (USRA)
 - 2023 University of Montreal Astromatic Program Scholarship
 - 2022 Ontario Science Merit Scholarship (OSOTF)
 - 2022 York University Excellence Scholarship
 - 2022 Indo-Canadian Golf Association Scholarship
 - 2021-2023 Bell Canada Student Scholarship
- Recipient of the Dean's Honour Roll – 2022, 2023
- Bergeron Entrepreneurs in Science and Technology Startup Experience Award - 2022
- First Year Undergraduate Institute Topper with a GPA of 9/9.

SERVICE/OTHER INVOLVEMENTS

- Scheduled presentation in ML methods for Sustainable Electronics category at MRS conference, Washington 2024
- Executive of Data Science Club at ASU 2024
- Mentored 27 undergraduate students at York University. 2022-2023
- Manager of the Hugging Face York University organization, serving as an administrator. 2023
- Selection in top 16 students globally by the University of Montreal for workshops on Machine learning and Physics 2023
- The Annual Meeting of Big Data & AI Leaders in Canada Participant 2023
- NSERC industrial stream CREATE program participant 2023
- York University Class representative for PHYS1011, PHYS1012, PHYS2040, PHYS3010 and PHYS4061 2021-2022
- Representative of YU as Student Advisory Council member at the Canadian Association of Physicists 2022
- Manager and Marketing Executive at the annual cultural festival of York University: Formal 2022
- Hosted a seminar on the Benefits of Graduate school with Michael Lu, attended by over 52 students. 2022
- Event coordinator for Bethune College Council and Astronomy Club Executive. 2021-2022