Joshua Joseph George

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Education

BSc Honors Applied Mathematics Expected May 2024
University of Alberta, Edmonton, Alberta. *GPA-3.6. Major GPA: 3.83*

Honors Thesis: Linear Independence and Stability of Integer Shifts of Compactly Supported Distributions

Research Experience

Undergraduate Research Assistant May 2023 - present
Max Planck Institute for Dynamics of Complex Technical Systems & Otto von Guericke University.
Topic: Visualizing Evolutions of Feature Maps in Flow Simulations
Work: (*work in progress*)
Supervisor: Mr. Yongho Kim & Dr. Jan Heiland

Undergraduate Research Assistant May 2023 - present
Department of Mathematics and Statistics, University of Alberta.
Topic: Determinantal Point Processes for Image Processing
Work: (*work in progress*)
Supervisor: Dr. Yaozhong Hu

Undergraduate Research Assistant January 2023 - April 2023
Department of Mathematics and Statistics, University of Alberta.
Topic: Linear Independence and Stability of Integer Shifts of Compactly Supported Distributions
Work: We explore the Linear independence of compactly supported distributions and prove results about the same, relate the Kernel of the space of semi-discrete convolutions of a distribution to the Fourier transform of the distribution and provide some correlation between Stability and Linear Independence.
Supervisor: Dr. Bin Han

Undergraduate Research Assistant May 2022- September 2022
Department of Mathematics and Statistics, University of Alberta.
Topic: Prove the existence of periodic solutions of second order differential equations.
Work: We start by studying the properties of the Dirac Delta and Green's Function and provide a specific solution to the second order non autonomous differential equation. Later on we study some topics in Topological Degree Theory and prove the Brouwer fixed point theorem and later on we prove the Infinite Dimensional Fixed Point Theorem.
Supervisor: Dr. Mohammad Ali Niksirat

Undergraduate Research Assistant May 2022- June 2022
Department of Physics, University of Alberta.
Work: Part of the undergraduate research cohort group. Determine the properties of the gas using data from the Gaia satellite to measure the motions of stars in young clusters.
Supervisor: Dr. Erik Rosolowsky

Undergraduate Research Assistant May 2021- September 2021
Department of Mathematics and Statistics, University of Alberta.
Topic: Moments of Quadratic Dirichlet L- Functions.
Work: We studied the properties of Non- Holomorphic Eisenstein Series, Modular Forms and Dirichlet L-Functions and it's functional equation. During this time, encountered and reproved some results like the Prime Number Theorem, Riemann Roch Theorem and also proved other results in Analytic Number Theory, Function field Theory and Multiple Dirichlet Series Theory.
Supervisor: Dr. Manish Patnaik

Teaching Experience

Undergraduate Teaching Assistant January 2023- present
Department of Mathematics and Statistics, University of Alberta.
Teaching Assistant under Dr. Alexander Litvak for Multivariate Calculus (*Intermediate Calculus I*)
Tasks: Grading Assignments

Undergraduate Teaching Assistant January 2023- present
Department of Computing Science, University of Alberta.
Teaching Assistant under Dr. Carrie Demmans for Formal Logic and Systems in Computing Science
Tasks: Grading Assignments and Run Seminar Sessions

Undergraduate Teaching Assistant September 2022- December 2022
Department of Mathematics and Statistics, University of Alberta.

Teaching Assistant under Dr. Volker Runde for Multivariate Real Analysis I (*Honors Advanced Calculus I*)
Tasks: Grading Assignments

Undergraduate Teaching Assistant September 2021- April 2022
Department of Mathematics and Statistics, University of Alberta.
Teaching Assistant in Decima Robinson Center.
Tasks: Helped Underclassman with introductory Honors Calculus and Linear Algebra courses.

Honors and Awards

University of Alberta Undergraduate International Scholarship *Issued : January 2023*
University of Alberta.
Awarded to students who is on a study permit with superior academic achievement who have completed at least one year of studies at the University of Alberta. Selection based on academic standing.

Dr Clement W Bowman Scholarship in Honors Applied Mathematics *Issued : August 2022*
Department of Mathematics and Statistics, University of Alberta.
Awarded to students with superior academic achievement enrolled in the third year of the Applied Honors Mathematics Program.

The Cyril G Wates Memorial Scholarship in Honors Pure Mathematics *Issued : August 2022*
Department of Mathematics and Statistics, University of Alberta.
To be awarded annually to a student of outstanding academic merit completing second year in Honors Mathematics.

International student scholarship *Issued : August 2020*
University of Alberta.
Students with superior academics who will be entering their first year of an undergraduate degree studying on a Student Visa Permit

Dean's List *Fall 2021, Winter 2022*

Two-time Mathematical Sciences Society Integration Bee Runner up
Fall 2020, Winter 2021

Math League competition *Issued : January 2020*
Department of Mathematics and Computer Science, Modern College of Business and Science, Muscat, Oman.
Runner up in Math League, an inter-school and university mathematics contest for students of grade 12

Bronze Medal in Gulf Math Olympiad *Issued : November 2019*

School Bronze Medal in International Math Olympiad *Issued : February 2019*

Merit List Holder *2014, 2015, 1016, 2017, 2018, 2019, 2020*

Relevant Coursework

Real Analysis I & II
Multivariate Real Analysis I & II
Honors Complex Analysis
Honors Linear Algebra I & II
Honors Ordinary Differential Equations
Group Theory I
Partial Differential Equations I
Mathematical modeling in life sciences
Numerical Methods I
Statistics I
Algorithms I
Basics and Intermediate Machine Learning
Problem Solving Seminar
Introduction to the foundations of computation I & II

Extracurriculars

Social Executive September 2021 - Present
Mathematical Sciences Society, University of Alberta
Work: Plan and organize social activitie and host math contests. Act as a liaison between the Society and the Faculty of Science, its various departments, and associate student groups as delegated by the President

Events Coordinator September 2021 - May 2022
Google developer Student Club, University of Alberta

Member September 2021 - present
Undergraduate Physics Club & Catholic Student Association, University of Alberta

Google cloud higher education summer challenge June – September 2021
Track: Data analyst

Tasks: Perform foundational data tasks in Google cloud using Python and SQL

Projects

Joshua George, Robert Joseph, Davidson Noby (2022). "Water and Hydroelectric Power Sharing". The Mathematical Contest in Modeling. COMAP's Mathematical Contest in Modeling (MCM) 2022

Joshua George, Oluwatimilehin Ajayi, Gurmol Sohi (2021)."Fear of COVID-19 Vaccine Hesitancy using Sentiment Analysis and World Population Data", Stem Fellowship Journal

Audio Classifier: Built a deep audio classifier on the TESS emotional dataset using Convolutional Neural Networks. (2022)

Conferences and Summer Programs

Alberta Number Theory Days conference, Banff International Research Station, November 2021

Mathematical Assosication of America Virtual MATHFEST, August 2021

The International Undergraduate Summer Enrichment Program, July – August 2021
Department of Mathematics and Statistics, University of Alberta

Programming/Computer Experience

I have considerable programming experience mostly in Python. Other languages I have had some acquaintances with are Julia, C++, Matlab and MySQL. Over the past three years I have completed various courses online on Coursera along with University course work. Few relevant ones include Deep Learning Specialization, Coursera, DeepLearning.AI, Machine Learning with Python, Coursera, IBM, Creating BigQuery Datasets and Visualizing Insights, Coursera, Google, Applied Data Science using Python, Coursera, Specialization, University of Michigan. Most of the code is on my **Github**.