Joshua Joseph George

+1-(825)-4615253 • jjgeorge@ualberta.ca • **LinkedIn** • **Github** • **Website**

EDUCATION

BSc Honors Applied Mathematics Expected May 2024
University of Alberta, Edmonton, Alberta.
First Class Honors with Distinction

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

RESEARCH EXPERIENCE

Undergraduate Research Assistant May 2024 - present
Department of Mathematics and Statistics, University of Alberta.
Topic: Working on a recursive algorithm for the G transformation to accurately compute tail probability distributions.
Supervisor: Dr. Hassan Safouhi

Undergraduate Research Assistant May 2023 - August 2023
Max Planck Institute for Dynamics of Complex Technical Systems
Topic: Visualizing Evolutions of Feature Maps in Flow Simulations
Work: Extracting, Visualising and Analysing feature weights and maps from Convolutions Autoencoders. Using Grad - CAM to infer useful information from the models on the spatially discretized Navier Stokes Equation in a cylinder.
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: Studied the theory behind Determinantal Point Processes from an image processing point of view. Worked on the generalization of the theorem of the moments formula for DPixPs.
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 for 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 topics in Topological Degree Theory and prove the Brouwer 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- May 2024
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- May 2024
Department of Computing Science, University of Alberta.
Teaching Assistant under Dr. Mohammad Reza Salavatipour and 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 first and second years with introductory Honors Calculus and Linear Algebra courses.

Honors and Awards

Yahya Scholarship in Honors Pure Mathematics *Issued : September 2023*

An Education Abroad Individual Award *Issued : June 2023*

Mathematical and Statistical Sciences Undergraduate Student Research Award *Issued : May 2023*

University of Alberta Undergraduate International Scholarship *Issued : January 2023*

Dr Clement W Bowman Scholarship in Honors Applied Mathematics *Issued : August 2022*

The Cyril G Wates Memorial Scholarship in Honors Pure Mathematics *Issued : August 2022*

The Mathematical Contest in Modeling (Successful Participant Award) *Issued: February 2022*

International student scholarship *Issued : August 2020*

Dean's List *Fall 2021, Winter 2022, Fall 2022, Winter 2023*

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

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

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

Extracurriculars

President May 2023 - May 2024
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

Treasurer September 2023 - May 2024
Catholic Student Association, University of Alberta

Social Executive September 2021 - May 2022
Google Developer Student Club, 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

Conferences and Summer Programs

New Directions in Compressible and Incompressible Flows: A Conference in Honor of Alexis Vasseur's 50th Birthday Conference, Max Planck Institute for Mathematics in the Sciences, June 2023

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