SHIVANK GOEL

shivankg.goel@mail.utoronto.ca | linkedin.com/in/shivankgoel | github.com/shivankgoel003 |

Education

University of Toronto

Honours Bachelor of Science (HBSc.) in Mathematics and Applied Statistics Double Major with CS minor, *Sep. 2021 - Apr. 2025*

- **Relevant Courses:** Introduction to Topology, Real Analysis, Number Theory, Machine Learning, Methods of Data Analysis, Classical Geometries, Surveys and Sampling, Probability and Statistics, Discrete Mathematics, Mathematical Proofs, Linear Algebra, Vector Calculus, Groups and Symmetries, Mathematical Cryptography, Data Structures and Analysis, Software Design OOP, Differential Equations, Computational Statistics, Algebraic Numbers (Independent Study with Prof. Marina Talvazade, Fall 2024)
- **University of Toronto Scholar's Award:** Merit based award for being one of the most outstanding students to apply.

Fields Institute of Mathematics

Shared Graduate Courses *Jan. 2025 - Apr. 2025*

- **Mathematical Neuroscience**: Focus on mathematical models of neurons and networks (Hodgkin-Huxley, Wilson-Cowan) with hands-on Python-based computational tutorials.
- **Mathematical Machine Learning**: Covers SVMs, kernel methods, VC theory, and neural networks, combining theoretical insights with practical projects.

Professional Experience

Teaching Assistant, MAT136 - Integral Calculus

Jan 25 - Apr 25

University of Toronto Mississauga

- Appointed to lead two tutorial sections (30 students each) for Integral Calculus, including grading tests and assignments.
- Appointed for active lecture support, facilitating in-class learning activities and addressing student queries.
- Hold weekly office hours to provide academic support and clarify course material.
- Responsible for creating an engaging learning environment and assisting students with integral calculus concepts.

Technical Lead

May 2023 - Aug. 2023

UofT Statistics and Data Science Society

- Led the development and implementation of data-driven tools and software solutions for club projects.
- Organized technical workshops on data science, coding, and machine learning for club members, encouraged collaboration and skill development.
- Managed the club's technical infrastructure, including website updates and ensuring smooth execution of virtualevents.

Data Processing Intern

Jan 23 - Apr 2023

Adiksu Technologies *Remote*

- Analyzed data, developed predictive models, and improved battery system efficiency in Python and R.
- Collaborated on data pipelines, enhancing decision-making.
- Applied statistics, produced reports, and drove recommendations

Research/Independent Study Experience

Independent Further Studies in Mathematics

Sep. 2024 - Dec. 2024

University of Toronto *Mississauga, ON*

- Conducted studies under Professor Marina Tvalvazade on algebraic number theory, focusing on algebraic integers, quadratic fields, and the Gelfond-Schneider theorem.
- Discussed proof of transcendence of π and the structure of Euclidean quadratic fields.
- Comprehensive notes available on Algebraic Numbers

Analyzing how organization size, sector, and cybersecurity strategies influence impacts on cyberattacks

Tools: R, Quarto, Data Cleaning, Data Simulation, Data Analysis, Statistical Testing (Individual Project)

University of Toronto

- Conducted statistical research to evaluate how organization size, sector, and cybersecurity strategies affect impacts ofcyberattacks, utilizing R, Quarto, and advanced data techniques on a dataset spanning 2004-2019.
- Used R and Quarto to clean data, create models, and make charts to show patterns and risks in cyberattacks.

- Wrote a research paper showing key findings, like healthcare and schools being major targets, and how good cybersecurity plans can help.
- Project details and analysis are shared on GitHub

Correlation Between Air Pollution and Mortality in Alberta

Tools: R, Negative Binomial Regression, Data Cleaning, Data Analysis, Quarto (Collaborative Project)
University of Toronto

- Conducted research to analyze the relationship between air quality indicators (AQHI, PM2.5) and respiratory/cardiac mortality rates from 2012 to 2022.
- Utilized negative binomial regression to model mortality counts and identify correlations with air pollution levels in Alberta.
- Collaborated on data processing, statistical modeling, and visualizations to study insights for public health impacts.
- Project details and analysis are shared on GitHub.

Technical Skills

Programming Languages:R, Python, Java, JavaScript , SQL
Developer Tools: Git/GitHub, Linux/Unix, Google Colab, Jupyter Notebook
Technologies/Framework Latex, Markdown, Numpy, Pandas, Android Studio, JUnit, Agile/SCRUM, HTML/CSS, XML, Quarto
Data Science: Data Analysis, Machine Learning, Bootstrapping, Jacknife, Regression Analysis