VIJAY KUMAR

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PROFESSIONAL SUMMARY

I'm a doctoral candidate at Clarkson University's mathematics department. My areas of interest in research include time series and spatial data analysis; Applied Mathematics; Statistics; Air Quality Modeling; and Machine Learning. I am conducting research on air quality modeling, forecasting, and analysis of public health variables such as air pollution.

EDUCATION

Ph.D: Mathematics
Clarkson University, Potsdam, NY, July 2023
- Member of American Aerosol Association (AAAR)
- Member of Society of Industrial and Applied Mathematics (SIAM)
- Member of Association of Women in Mathematics (AWM)
- Research in Data Science applications to Air Quality and Public Health
- Nominated for the Graduate Leadership Program by Clarkson University

MS: Applied Data Science
Clarkson University, Potsdam, NY, May 2023
- Courses: Database Modeling, Design, and Implementation, Data Warehousing, Probability and Statistics for
- Analytics, Data Mining, Information Visualization, and Machine Learning.

Master of Science (M.S.): Mathematics
Clarkson University, Potsdam, NY, May 2021
Graduated with 3.72/4 GPA.
Graduated in Top 5% of Class

Master of Science (M.S.): Applied Mathematics
NED University of Engineering and Technology, Karachi, Sindh, Dec 2015
- Graduated with 3.45/4 GPA.
- Graduated in Top 5% of Class
- Dissertation: Effect of MHD on Fractionalized Maxwell Fluid in Porous Pipes.

Bachelor of Science (B.S.): Mathematics
Sindh University, Jamshoro, Sindh, Dec 2012
- Graduated with 3.21/4 GPA
- Graduated in the Top 5% Class

EXPERIENCE

Professional

Instructor
Clarkson University, 2022 - Current
- Lectured on course topics and evaluated student assignments and exams and provided constructive feedback.

MBioTS REU program graduate student coordinator (GSC)
Clarkson University, 2022 - 2022
- Liaised between administrative offices and logistical personnel for smooth program operations.
- Facilitated communication between students and academic programs.
- Advised students on research projects.

Teaching Assistant
Clarkson University, 2019 - 2022
- Assisted instructor with in-class activities, grading assignments, facilitating class discussion, tutoring and proctoring examinations.
- Observed students' performance, recording relevant data to aid primary instructor in assessing progress.
- Helped struggling students with problem areas to build confidence.

Graduate Assistant
Clarkson University, 2018 - 2019
- Prepared course paperwork, delivered lessons and graded assignments to support teaching.

Mathematics Lecturer
SMI University, 2016 - 2018
- Used instructional and tutoring strategies to help students explore foundational concepts in mathematics.
- Assigned projects and homework to reinforce classroom lectures.

Mathematics Lecturer
NED University of Engineering and Technology, 2013 - 2016
- Taught undergrad-level courses and administered exams to students.
- Promoted critical thinking, personal development and commitment with custom lectures and assignments.

Mentoring
Mentored undergraduate students to make their research projects successful;
- *McKayah Pugh, and Samuel Lowery,* Undergraduate in MathBio REU, Clarkson University Summer 2022.
- *Isaac Kiiza,* Undergraduate in Mathematics, Clarkson University Summer 2021.
- *Dawit Gebremichael,* Undergraduate in Mathematics, Clarkson University Summer 2021.
- *Jeremy Clark,* Undergraduate in Computer Science, Clarkson University Spring, Summer 2020.
- *Bridget Wangler,* Undergraduate in Engineering & Management, Clarkson University Fall 2019, Spring 2020.

Leadership

President

Pakistani Student Association at Clarkson University, 2021 - Current

- Developed leadership abilities by organizing special student activities and service projects.
- Documented council meetings, prepared notes, and distributed information to student body.
- Maintained civility and smooth operations of council meetings by following parliamentary procedures.
- Promote diversity and inclusion.

CONFERENCES & WORKSHOPS

Workshops:

- Nominated for Clarkson University's Graduate Leadership Development Program, February 28-April 25, 2022, at Clarkson University, Potsdam, NY.
- Participant of Clarkson's SRIHR-ICMR Indo-US Training Workshop on Low-Cost Air Quality Sensors and Related Data Analytics, August 5–9, 2019 at Clarkson University, Potsdam, NY.
- Participant in a 15-day Faculty Development Program, in August 2016 at SMI University, Karachi, Pakistan.
- Participant in a 01-day workshop on Scientific Writing, February 2016 at the University of Karachi, Karachi, Pakistan.

Invited Speaker:

- Invited as Session Co-Chair during Session 11 of the Instrumentation and Methods (11IM) Raleigh, NC 40th Aerosol Conference by American Aerosol Association (AAAR) October 2022

Conference Talks:

- Understanding the source components captured by the Purple Air Network, Raleigh, NC, 40th Aerosol Conference by the American Aerosol Association (AAAR), October 2022.
- Spectral analysis of low-cost sensor network data UC Davis, Pasadena, California, ASIC, May 2022.
- Deferential Impact of COVID-19 Risk Factors on Ethnicities in the United States Clarkson University, Potsdam, NY, MCCNNY, March 2022.
- Spatiotemporal Analysis of PM2.5 in Chicago using Data from EPA and Low-Cost Sensor Network, Virtual, AAAR Virtual 39th Conference, October 2021.
- Infection vs Fatality of COVID-19 in New York State: Effect of Demographics and Poor Air Quality Virtual, AAAR 38th Virtual Conference, August 2020.
- Evaluating Spatio-temporal accuracy of LUR models using Low-cost Sensor Network Data, Clarkson University, Potsdam, NY, eRAPS, April 2020.
- Air Quality prediction using LUR Model: Parameter Reduction and Optimization UMBC Baltimore, Maryland, 13th Annual Probability and Statistics Day, April 2019.
- Air Quality prediction using LUR Model: Parameter Reduction and Optimization Clarkson University, Potsdam-NY, RAPS spring 2018, April 2019.
- Air Quality prediction using LUR Model: Parameter Reduction and Optimization Clarkson University, Potsdam-NY, RAPS spring 2018, April 2019.
- Fractionalized MHD Maxwell fluid through porous cylinders, Recent Advances in Pure and Applied Mathematics (RAPAM'16), QUEST Nawabshah Pakistan, January 2016.
- Effect of MHD on fractionalized Maxwell fluid between coaxial cylinders, NED UET Karachi Pakistan, First International Conference on Chemical and Material Processing, December 2015.

- Effect of MHD on fractionalized Maxwell fluid between coaxial cylinders, Institute of Space and Planetary Astrophysics Karachi Pakistan, Third National Conference on Space Science and Technology, October 2015.

AWARDS

- Travel Grant to present research work at the 40th Aerosol Conference by American Aerosol Association (AAAR), Raleigh, NC (October 2022).
- Student Registration Waiver Grant to the 2021 39th Aerosol Conference by the American Aerosol Association (AAAR) (October 2021).
- Student Registration Waiver Grant to the 2020 38th Aerosol Conference by the American Aerosol Association (AAAR) (October 2020).
- PhD Studies Scholarship awarded by US Pakistan Knowledge Corridor, Higher Education Commission (HEC) of Pakistan (August-2018).
- 15 Days Postgraduate Fellowship in Mathematical Analysis, Modelling and Applications awarded by SISSA, Trieste, Italy (August-2016).
- Laptop for MS Studies at NED University, under Prime Minister Laptop Scheme awarded by Higher Education Commission (HEC) of Pakistan (2015).
- District Government Scholarship to support BS Mathematics degree at Sindh University, awarded by the District Government of Ghotki, Pakistan (2009-2012).
- A School Level Scholarship was awarded by the District Education Government, Ghotki, Pakistan (2003).

SKILLS

- Statistical analysis
- ArcGis
- Strong communication
- Strategic planning
- Data filtering
- Spatial Statistics
- Problem-solving
- Written communication
- R Programming
- Data mining
- Team work
- Time Management