

VIJAY KUMAR

POSTDOCTORAL RESEARCH SCIENTIST · COLUMBIA UNIVERSITY MAILMAN SCHOOL OF PUBLIC HEALTH

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Education

Clarkson University

Potsdam, NY - USA

PHD, MS MATHEMATICS

2018 - 2023

- Advisor: Dr. Sumona Mondal & Dr. Suresh Dhaniyala

Thesis: Statistical Learning and Modeling of Low-Cost Air Quality Sensor Data and Epidemiological Analysis

Clarkson University

Potsdam, NY - USA

MS APPLIED DATA SCIENCE

2022 - 2023

- Advisor: Dr. Boris Jukic

NED University

Karachi, Pakistan

MS APPLIED MATHEMATICS

2013 - 2015

- Advisor: Dr. Muhammad Jamil

University of Sindh

Jamshoro, Pakistan

BS MATHEMATICS

2009 - 2012

Professional Experience

- 2023- **Postdoctoral Research Scientist**, Bayesian Machine Learning, Columbia University, New York, NY, USA
- 2022-2023 **Graduate Student Coordinator, NSF MBioTS Summer REU**, Mathematics, Clarkson University, Potsdam, NY, USA
- 2022-2023 **Adjunct Instructor**, Mathematics, Clarkson University, Potsdam, NY, USA
- 2018-2022 **Graduate Teaching Assistant**, Mathematics, Clarkson University, Potsdam, NY, USA
- 2016-2018 **Lecturer**, Artificial Intelligence & Mathematical Sciences, SMI University, Karachi, Pakistan
- 2013-2016 **Lecturer**, Mathematics, NED University of Engineering and Technology, Karachi, Pakistan

Publications

† *equally contributing first author*

PEER REVIEWED PUBLICATIONS

Vijay Kumar, Dinushani Senarathna, Supraja Gurajala, William Olsen, Shantanu Sur, Sumona Mondal, and Suresh Dhaniyala.

"Spectral Analysis Approach for Assessing Accuracy of a Low-Cost Air Quality Sensor Network Data." *Atmospheric Measurement Techniques*, 21 (2023): 5415427

Mohammad Meysami[†], **Vijay Kumar**[†], Mckayah Pugh, Samuel Thomas Lowery, Shantanu Sur, Sumona Mondal, and James Martin Greene. "Utilizing logistic regression to compare risk factors in disease modeling with imbalanced data: a case study in vitamin D and cancer incidence." *Frontiers in Oncology*, 13 (2023): 1227842

Chaipitakporn Chaya[†], Prashant Athavale[†], **Vijay Kumar**, Thevasha Sathiyakumar, Marko Budišić, Shantanu Sur, and Sumona Mondal. "COVID-19 in the US during pre-vaccination period: Shifting impact of sociodemographic factors and air pollution." *Frontiers in Epidemiology* 2 (2022): 927189

Partohaghighi Mohammad, **Vijay Kumar**, and Ali Akgül. "Comparative study of the fractional-order crime system as a social epidemic of the USA scenario." *International Journal of Applied and Computational Mathematics* 8, no. 4 (2022): 190.

Mondal Sumona[†], Chaya Chaipitakporn[†], **Vijay Kumar**, Bridget Wangler, Supraja Gurajala, Suresh Dhaniyala, and Shantanu Sur. "COVID-19 in New York state: Effects of demographics and air quality on infection and fatality." *Science of The Total Environment* 807 (2022): 150536.

Athavale, Prashant[†], **Vijay Kumar**[†], Jeremy Clark, Sumona Mondal, and Shantanu Sur. "Differential impact of COVID-19 risk factors on ethnicities in the United States." *Frontiers in public health* 9 (2021): 743003.

Jamil, Muhammad [†], **Vijay Kumar**[†], Muhammad Zafarullah, and Azam Khan. "Fractionalized magnetohydrodynamics (MHD) of the Maxwell fluid through porous cylinders." Special Topics & Reviews in Porous Media: An International Journal 12, no. 6 (2021).

PRE-PRINTS

Vijay Kumar, Dinushani Senarathna, Supraja Gurajala, William Olsen, Shantanu Sur, Sumona Mondal, and Suresh Dhaniyala. "Understanding the source components captured by the Purple Air Network." ChemRxiv: Earth, Space, and Environmental Chemistry, January, 2023.

IN PREPARATION

Vijay Kumar, Shantanu Sur, Dinushani Senarathna, Supraja Gurajala, Suresh Dhaniyala, and Sumona Mondal. "Quantifying individual impact of correlated predictors in low and high-frequency time series: application to low-cost air quality sensor data."

Dinushani Senarathna, **Vijay Kumar**, Supraja Gurajala, Suresh Dhaniyala, Shantanu Sur, and Sumona Mondal. "Correction models for estimation of PM_{2.5} from low-cost sensor data: Effects of distance and sensor numbers"

Vijay Kumar, Dinushani Senarathna, Thevasha Sathiyakumar, Shantanu Sur, and Sumona Mondal. "Effect of COVID-19 Lockdown on Traffic-related Air Pollution"

Awards, Fellowships, & Grants

RESEARCH GRANTS

2023	Echo360 e3 Tech Grant , Echo360	\$2,000
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TRAVEL GRANTS

2023	Early Career Travel Grant , Colorado State University, Fort Collins	\$ 1,250
2023	Student Travel Grant , American Statistical Association	\$ 2,00
2023	Graduate Student Travel Grant , Clarkson University	\$ 4,00
2022	Student Travel Grant , American Aerosol Association for Aerosol Research	\$ 5,00
2021	Student Grant , American Aerosol Association for Aerosol Research	\$ 2,00
2020	Student Grant , American Aerosol Association for Aerosol Research	\$ 2,00

AWARDS

2023	Phalanx Leadership Award , Clarkson University
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FELLOWSHIPS/SCHOLARSHIPS

2016	15 Days Postgraduate Fellowship , SISSA, Trieste, Italy	Euro 15,00
2009-2012	District Government Scholarship , District Government Ghotki, Pakistan	PKR 40,000

Outreach & Professional Development

SERVICE AND OUTREACH

2022-2023	Pakistani Student Association , Founding member & President
2018	Science Fair at SUNY Potsdam , Volunteer Judge

PROFESSIONAL MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM)
- American Statistical Association (ASA)