Parsa Rangriz

CONTACT
INFORMATION

Department of Statistics and Actuarial Science,
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EDUCATION

University of Waterloo
M.Math. in Statistics (Sep 2023 - Apr 2025)
- Advisor: Prof. Aukosh Jagannath
- GPA: 92.25/100
- Thesis: *High-Dimensional Scaling Limits of SGD in Single-Index Models*

Sharif University of Technology
B.Sc. in Physics (Sep 2018 - Feb 2023)
- Minor in Mathematics
- GPA: 18.34/20

RESEARCH
EXPERIENCES

Graduate Research Student,
University of Waterloo (Sep 2023 - Apr 2025)
- Supervisor: Prof. Aukosh Jagannath
- Project: *High-Dimensional Scaling Limits of SGD in Single-Index Models*
- Description: *This work studies the scaling limits of stochastic gradient descent (SGD) with a constant step size in high-dimensional single-index models. It establishes limit theorems for SGD trajectories, revealing both deterministic (ODE-governed) and diffusive (SDE-governed) dynamics. A key finding is that when the information exponent of the model exceeds two, deterministic scaling limits fail to ensure consistent estimation, necessitating diffusive corrections to describe the dynamics of SGD.*

Summer Research Intern,
EPFL - Swiss Federal Institute of Technology in Lausanne (July 2022 - Sep 2022)
- Supervisor: Prof. Lenka Zdeborova
- Project: *Assortative Partitions on Dense Random Graphs.*
- Description: *Assortative partitions on directed dense random graphs were studied using the replica-symmetric approach to analyze phase transitions and to interpret partitions in the high-dimensional limit using message-passing algorithms.*

HONORS AND
AWARDS

University of Waterloo Graduate Scholarship, $1,000 CAD, 2025

Graduate Research Studentship, University of Waterloo, $36,473 CAD, 2023-2025

International Master's Award of Excellence, University of Waterloo, $5,000 CAD, 2023

MMath Entrance Scholarship, University of Waterloo, $1,000 CAD, 2023

Summer@EPFL Fellowship, EPFL, 4,800 CHF, 2022

Ranked 5th in the 26th Iran University Physics Olympiad held by Sanjesh Org., 2021

Silver Medal in the 30th Iran National Physics Olympiad held by Sampad Org., 2017

SUMMER
SCHOOLS

CRM-PIMS Summer School in Probability, Universite de Montreal, Canada, 2024

Summer@EPFL: Summer Research Internship, EPFL, Switzerland, 2022

TEACHING
EXPERIENCES

Teaching Assistant, University of Waterloo (2023-2025)
- STAT 333: Stochastic Processes 1 (Winter 2025, Winter 2024)
- STAT 833: Stochastic Processes 2 (Fall 2024)
- STAT 330: Mathematical Statistics (Spring 2024, Fall 2023)
- STAT 231: Probability (Spring 2024)
- STAT 230: Statistics (Spring 2024)
- STAT 202: Introductory Statistics for Scientists (Fall 2023)

Teaching Assistant, Sharif University of Technology (2019-2022)
- Thermodynamics and Statistical Mechanics III (Fall 2022, Fall 2021, Spring 2021)
- Thermodynamics and Statistical Mechanics II (Spring 2021)
- Thermodynamics and Statistical Mechanics I (Fall 2020)
- General Physics III (Fall 2019)

SKILLS

Programming: Experienced in C and Python
Libraries: Familiar with Scikit-Learn, Keras, and TensorFlow
Tools: Experienced in Wolfram Mathematica and LaTeX
Languages: English (C1), Turkish (Fluent), Azerbaijani and Persian (Native)

REFERENCES

Aukosh Jagannath
Associate Professor,
Department of Statistics and Actuarial Science,
University of Waterloo,
a.jagannath@uwaterloo.ca

Gregory Rice
Associate Professor,
Department of Statistics and Actuarial Science,
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