

# Parsa Rangriz

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CONTACT	✉ prangriz@uwaterloo.ca	🌐 www.rangriz.com	☎ +1 (548) 577 6360
INTERESTS	Probability Theory, High Dimensional Statistics, Random Matrices, Spin Glasses		
EDUCATION	<b>University of Waterloo</b> , ON, Canada	Sep 2023 - Dec 2024 (Expected)	
	<b>Master of Mathematics in Statistics</b> (Thesis-Based) (Supervisor: <b>Aukosh Jagannath</b> )		
	<b>Sharif University of Technology</b> , Tehran, Iran	Sep 2018 - Feb 2023	
	<b>Bachelor of Science in Physics</b> <b>Minor in Mathematics</b>		
RESEARCH EXPERIENCES	<b>University of Waterloo</b> , ON, Canada	Sep 2023 - Current	
	<b>Graduate Research Assistant</b> Supervisor: <b>Aukosh Jagannath</b>		
	<ul style="list-style-type: none"><li>As my thesis project, I am working on the high-dimensional limit theorems for SGD that lead to ballistic (ODE) or diffusive (SDE) limits using non-convex losses such as the multi-index model.</li><li>An individual reading course on Random Matrix Theory and High Dimensional Probability was completed, covering topics such as concentration concepts, the semicircle law, and the Marchenko-Pastur law.</li></ul>		
	📄 rangriz.com/files/RMT.pdf		
	<b>EPFL</b> , Lausanne, Switzerland	July 2022 - Sep 2022	
	<b>Summer Research Intern</b> Supervisor: <b>Lenka Zdeborova</b> Project: Assortative Partitions on Directed Dense Graphs		
	<ul style="list-style-type: none"><li>Assortative partitions on directed dense random graphs was studied using replica-symmetric solutions in order to expand on the heuristic results of assortative partitions on regular graph from the earlier published work .</li></ul>		
	<b>Sharif University of Technology</b> , Tehran, Iran	June 2021 - Sep 2021	
	<b>Undergraduate Research Student</b> Supervisor: <b>Amir Daneshgar</b> Project: Belief Propagation for Graph Partitioning		
	<ul style="list-style-type: none"><li>The BP algorithm was studied for the graph bi-partitioning problem, which corresponds to finding the ground state of the ferromagnetic Ising model with a fixed magnetization. Additionally, phase diagrams of the bi-partitioning problem on random graphs were determined.</li></ul>		
	📄 rangriz.com/files/BP2021.pdf		
	<b>Sharif University of Technology</b> , Tehran, Iran	Feb 2021 - June 2021	
	<b>Undergraduate Research Student</b> Supervisor: <b>Abolhassan Vaezi</b> Project: Phase Transitions in the Transverse-Field Ising Model		
	<ul style="list-style-type: none"><li>The phase diagrams of the correlation function and the entanglement entropy of the one-dimensional transverse-field Ising model were determined and different phases were classified using machine learning and neural network techniques.</li></ul>		
	📄 rangriz.com/files/ML2021.pdf		

HONORS AND  
AWARDS

**Graduate Research Studentship, University of Waterloo, 2023-2024**

Received a scholarship of 18,000 CAD for the entire 16-month program.

**International Master's Award of Excellence, University of Waterloo, 2023**

Received an award of 12,500 CAD for one year.

**Master of Mathematics Entrance Scholarship, University of Waterloo, 2023**

Selected as one of top eight new graduate students to receive a 1,000 CAD award.

**Summer@EPFL Fellowship, 2022**

Ranked top 1.5% among 4,000 applicants and awarded a 4,800 CHF fellowship.

**Silver Medal in the 30th Iran National Physics Olympiad, 2018**

Received a silver medal, ranking 14th out of 42 medalists, among nearly 10,000 high school student competitors.

SUMMER  
SCHOOLS

**CRM-PIMS Summer School in Probability 2024**

CRM, Universite de Montreal, QC, Canada, 2024

- The four-week summer school featured two main courses: Random Matrix Theory of High-Dimensional Optimization, given by Elliot Paquette, and Branching Random Walks, given by Perla Sousi.

TEACHING  
EXPERIENCES

**University of Waterloo, Ontario, Canada**

Teaching Assistant

- STAT 433: Stochastic Processes 2 (Fall 2024)
- STAT 330: Mathematical Statistics (Spring 2024, Fall 2023)
- STAT 231: Probability (Spring 2024)
- STAT 333: Stochastic Processes 1 (Winter 2024)
- STAT 230: Statistics (Spring 2024)
- STAT 202: Introductory Statistics for Scientists (Fall 2023)

**Sharif University of Technology, Tehran, Iran**

Teaching Assistant

- Advanced Statistical Mechanics (Fall 2022, Fall 2021, Spring 2021)
- Statistical Mechanics 2 (Spring 2021)
- Statistical Mechanics 1 (Fall 2020)

SELECTED  
COURSES

**University of Waterloo, Ontario, Canada (2023-2024)**

- STAT 946: Topics in Statistics (Mathematical Foundations of Deep Learning)
- STAT 902: Theory of Probability 2 (Stochastic Calculus and Brownian Motion)
- STAT 891: Topics in Probability (Random Matrix Theory and HDP)
- STAT 908: Statistical Inference
- STAT 901: Theory of Probability 1 (Probability and Measure Theory)

**Sharif University of Technology, Tehran, Iran (2018-2023)**

- Advanced Theory of Statistics
- Information-Theoretic Methods in High Dimensional Statistics
- Graphical Models, Variational Inferences, and Entropy Maximization
- Quantum Computation and Quantum Information
- Advanced Quantum Mechanics