VISHAL RAMAN

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EDUCATION

University of California - Berkeley(3.9) *August 2019 - Present*
Majors: *Mathematics, Computer Science*

Renyi Instutite - Budapest Semesters in Mathematics(4.0) *August 2020 - May 2020*
Coursework: *Advanced Combinatorics, Algebraic Topology*

RESEARCH EXPERIENCE

Renyi Institute, Research Intern *Fall 2020*
Group research in convex geometry under the supervision of Gergely Ambrus. We study relaxations of Helly's theorem in order to characterize transversal properties of families of convex sets.

UC Berkeley, Research Intern *Spring 2021*
Guided research in statistics/partial differential equations under the supervision of Tyler Maltba, Steve Evans. We use sparse regression and physically-informed neural networks(PINN) in order to render probability density functions(PDFs) or cumulative distribution functions(CDFs) for stochastic dynamical systems.

WORK EXPERIENCE

IMC Trading, Software Engineering Intern *Summer 2021*

Zimmer Bionet, Data Science Intern *Spring 2021*

2021 Discover Citadel and Citadel Securities Invitee *May 2021*

PROJECTS

Blackjack Decision Maker *Winter 2020*
Models the Blackjack card game as a Markov Decision Process (MDP) and finds optimal values through Value Iteration/Fixed-point iteration, accounting for card-counting.

Database Management System *Spring 2021*
Design and implementation of Database Management System, with B+ Tree Indices for efficient file retrieval, efficient joins and query optimization, multigranular locking, and logging/recovery. (CS 186 at Berkeley)

Geodesic Convex Optimization *Spring 2021*
Reading and implementation project covering differential and Riemannian geometry, geodesic convexity, and applications to non-convex optimization problems such as computing the Brascamp-Lieb constant and the operator scaling problem.(CS 270 at Berkeley)

RELEVANT COURSEWORK

Computer Science - 170: Data Structures and Algorithms, 186: Database Systems, 188: Artificial Intelligence, 189: Machine Learning, 270: Combinatorial Algorithms
Math - 202A: Measure Theory and Topology, 202B: Functional Analysis, 205: Complex Analysis, 214: Differential Geometry, 222AB: Partial Differential Equations, 258: Harmonic Analysis
Statistics - 135: Mathematical Statistics, 218a: Probability Theory, 218b: Stochastic Processes
200+ denotes graduate level coursework

HONORS

William Lowell Putnam Mathematical Competition - Top 500 *Winter 2020*

American Invitational Mathematics Exam(AIME) Qualifier *Spring 2019*

United States of America Computing Olympiad(USACO) - Gold Division *Spring 2018*

Programming Languages: Python, Java, C++, R, LaTeX, SQL, MongoDB
Libraries/Frameworks: NumPy, pandas, TensorFlow