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 - Present*
Coursework: *Advanced Combinatorics, Algebraic Topology*

WORK/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.

IMC Trading, Software Engineering Intern *Summer 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. The model takes in a counting strategy as user input.

Adversarial Games and Multi-Agent Search *Summer 2020*
We design agents for classic Pacman(including the ghosts), and implement minimax(w/ alpha-beta pruning) and expectimax search with custom evaluation functions. (CS188 at Berkeley)

B++ Trees *Spring 2021*
Design and implementation of B+ trees and indices, a data structure supporting fast retrival in block-oriented storage contexts, such as file systems. (CS 186 at Berkeley)

RELEVANT COURSEWORK(BERKELEY)

Computer Science - 61B: Data Structures, 170: Algorithms and Intractable Problems, 186: Database Systems 188: Artificial Intelligence, 270: Combinatorial Algorithms and Data Structures
Math - 202a: Measure Theory and Topology, 202b: Functional Analysis, 250b: Commutative Algebra, 218a: Probability Theory, 218b: Stochastic Processes, 222: Partial Differential Equations, 258: Harmonic Analysis
200+ denotes graduate level coursework

HONORS

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

United States of America Physics Olympiad(USAPhO) *Spring 2019*
Honorable Mention

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

Programming Languages: Python, Java, C++, R, LaTeX, SQL, HTML, CSS
Libraries/Frameworks: NumPy, pandas, TensorFlow, BigQuery, React.js