Pratik Rathore

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LinkedIn

EDUCATION

B.S., Electrical Engineering, GPA 3.99 *Expected May 2021*
B.S., Mathematics, GPA 3.99 *Expected May 2021*
University of Maryland, College Park, MD

- Banneker/Key Scholar – A full scholarship awarded to top 1% of undergraduates
- GRE Score: Quantitative (170), Verbal (167), Analytical Writing (4.5)

SKILLS

Programming Languages: Java, C, Python, C++, Arduino, LaTeX, Verilog
Computing/Statistical/Modeling Environments: MATLAB, R, Simulink, Mathematica, Xilinx

RESEARCH & INDUSTRY EXPERIENCE

Electrical Engineering Intern May 2020 – Present
Prototype Systems & Technology Group, Systems & Technology Research, Woburn, MA

Developing a deep learning-based platform to perform automatic target recognition on maritime ISAR images.

- Developed an algorithm that provides a time series of roll and pitch angles given a CAD model of a ship
- Currently designing algorithms to automatically extract ship features (e.g. dimensions, moments of inertia, damping coefficients) from CAD models

Worked on a US Department of Defense funded SBIR research project focused on improving Inverse Synthetic Aperture Radar (ISAR) signal processing to enhance ISAR image quality.

- Implemented Kalman filtering to develop a tracking algorithm for estimating target motion in MATLAB
- Designed a MATLAB simulation using quaternion theory to assess quality of Kalman filter motion estimates
- Developed image processing algorithms in MATLAB to use target motion estimates to form a high-resolution, rotational motion compensated image
- Contributed to project technical report and presented results to group

Electrical Engineering Intern May – Aug. 2019
Military Support Programs, Lockheed Martin Space, Littleton, CO

- Led reviews for computational models (frequency sweep generator, solar array controller, attitude determination with Kalman filter) being developed for satellites in MATLAB/Simulink
- Developed, edited, and documented test cases in MATLAB for these models
- Used Simulink to add new functionality and improve upon the existing documentation for these models
- Presented model walkthroughs and review suggestions to colleagues during meetings

Undergraduate Researcher May – Aug. 2018

Department of Mathematics, University of Maryland, College Park, MD

- Investigated Descartes numbers, a family of odd spoof perfect numbers
- Proved new results regarding the prime factorizations of Descartes numbers
- Developed and submitted a research manuscript containing the proofs of these results to arXiv (arXiv:1808.10027)

Student Research Intern June – Aug. 2016

Collaborative Health Initiative Research Program, Uniformed Services University of the Health Sciences, Bethesda, MD

- Analyzed induced pluripotent stem cells (iPSCs) using single-cell transcriptomics technologies
- Attempted to determine optimal parameters for single-cell transcriptomics runs
- Designed code in R to apply k-means clustering, principal component analysis (PCA), and t-distributed stochastic neighbor embedding (t-SNE) to single-cell RNA data

HONORS/AWARDS

Dean's List – A. James Clark School of Engineering for 6 consecutive semesters	2017 – 2020
Dean's List – College of Computer, Math, & Natural Sci. for 6 consecutive semesters	2017 – 2020
Honors College, University Honors, University of Maryland	2017 – 2021
International Mathematics Competition for University Students, Second Prize	July 2020
William Lowell Putnam Mathematical Competition, Ranked in Top 5% of 4200+ Participants	Feb. 2020
Member of UMD Putnam Team, 14th place team in the nation	Feb. 2020
University of Maryland Dan Shanks Award for research in number theory	April 2019
William Lowell Putnam Mathematical Competition, Ranked in Top 3% of 4600+ Participants	March 2019
Member of UMD Putnam Team, 9th place team in the nation	March 2019
Virginia Tech Regional Math Contest, Ranked 15th out of 739 participants	Oct. 2017
United States of America Mathematical Olympiad (USAMO) Qualifier	May 2017
United States of America Biology Olympiad (USABO) Semifinalist	March 2016
Program in Mathematics for Young Scientists (PROMYS)	June 2015

LEADERSHIP/EXTRACURRICULAR ACTIVITIES

University Honors Peer Mentor	Sep. 2020 – Present
University of Maryland Puzzle Club	Sep. 2017 – Present
Captain, Montgomery Blair Math Team	Aug. 2016 – June 2017
Coach, Robert Frost Middle School MathCounts Team	Dec. 2015 – March 2017

PUBLICATIONS/PREPRINTS

Rathore, P., *There are no Cube-free Descartes Numbers with Exactly Seven Distinct Prime Factors* (2018), https://arxiv.org/abs/1808.10027, preprint.

RELEVANT COURSES

Electrical Engineering: Discrete Signal Analysis, Signal & System Theory, Communication Systems, Control Theory, Machine Learning, Device Physics, Analog and Digital Electronics (course + lab)
Mathematics: Linear Algebra, Real Analysis, Statistics, Probability Theory, Applied Harmonic Analysis, Abstract Algebra, Numerical Analysis
Coursera: Machine Learning (Stanford University), Game Theory (Stanford University & The University of British Columbia)