

Joseph Li

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Education

August 2018 - Present

University of Maryland, College Park - *B.S. in Mathematics, B.S. in Computer Science, Physics Minor*

- GPA: 3.953
- Expected graduation date: Fall 2021

Coursework

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| • Applied Stochastic Processes | • Introduction to Signal Processing |
| • Advanced Calculus I/II | • Introduction to Statistical Thermodynamics |
| • Introduction to Abstract Algebra | • Introduction to Computer Systems |
| • Introduction to Numerical Analysis I | • Organization of Programming Languages |
| • Combinatorics and Graph Theory | • Design and Analysis of Computer Algorithms |

Experience

September 2020 - December 2020

University of Maryland- Grader for MATH402 Algebraic Structures

February 2020 - May 2020

University of Maryland- Grader for STAT410 Introduction to Probability Theory

September 2019 - December 2019

University of Maryland- Grader for MATH310 Introduction to Mathematical Proof

February 2019 - December 2019

University of Maryland- Undergraduate Research Assistant

FIRE: The First-Year Innovation & Research Experience

Engineering Biosensors Lab

Research Advisor: Dr. Catherine Spirito

- Performed selection of RNA aptamers against NasR protein, involved in antitermination of transcription under presence of nitrate in bacterial cells
- Constructed a chemostat to test microcompartment formation in pdu *E. coli* in continuous culture
- Assisted in the development of an aptamer-based biosensor for detection of *E. coli* in water samples using gold nanoparticles
- Developed professional lab procedures and reports for operation of chemostat

February 2019 - May 2019

University of Maryland- Grader for STAT410 Introduction to Probability Theory

Projects

- Developed a simulation that approximates the distribution for the number of matches of 3 or more orbs in a line in any $m \times n$ board, based on the mobile game *Puzzle and Dragons*. Designed a dynamic programming algorithm to count matches in $O(mn)$ time. Computed combinatorially the exact distribution for a 2×2 board with matches of 2 orbs in a line and verified correctness using simulation.
<https://jli0108.github.io/pazudora-simulation/>

Skills

- \LaTeX , Java, Matlab, R, C, HTML, MIPS Assembly, JavaScript, Ruby, OCaml, Rust