

# Max D. Mandel

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## EDUCATION

### The University of Chicago

Chicago, IL

*Bachelor of Science in Computational and Applied Mathematics, Minor in Physics*

Expected, June 2025

GPA: 3.40/4.00

Relevant Coursework: Linear Algebra; Python; Systems Programming I-II (C); Discrete Math; Numerical Analysis; Probability; Statistical Theory I-II; Markov Chains, Martingales, Brownian Motion; ODEs; Algorithms; Optimization

## EXPERIENCE

### ANSYS

Boulder, CO

*Software Developer Intern - Computational Geometry*

June 2024 - September 2024

- Developed and implemented algorithms for pre-processing large noisy geometric mesh data sets for curvature field computation on CAD meshes, including statistical analysis for outliers and non-homogenous data
- Patent application in-progress: optimized functionalities for generating adaptive minimal surface infills

*Software Developer Intern*

June 2023 - September 2023

- Developed and implemented algorithms for refining 3D quad meshes, improving physics simulation results
- Optimized low-level computational geometry algorithms in C++, re-wrote legacy code and parallelized processes to significantly increase compute speed
- Produced unit tests for topology optimization and CAD-to-simulation workflows

### University of Chicago Department of Mathematics

Chicago, IL

*Lead Teaching Assistant, Elementary Functions and Calculus I-II-III*

September 2024 - Present

- Leading twice weekly tutorials for 12 students, proctoring assessments and grading 50+ assignments weekly
- Receiving training in collaborative learning pedagogy and content analysis

*Teaching Assistant, Elementary Functions and Calculus I-II*

September 2023 - March 2024

- Lead twice weekly tutorials for 8 students, proctoring assessments and grading 50+ assignments weekly

### LightbeamTV

New York, NY

*Analytics Intern*

May 2022 - September 2022

- Built data reports and dashboards on advertising and social media analytics for the media marketing team
- Conducted hypothesis and A/B testing to assess performance of media and advertising campaigns

## ACTIVITIES & PROJECTS

### Phoenix Tutoring

Chicago, IL

*President*

September 2022 - Present

- Leading a University-affiliated community service tutoring organization with 50-90 undergraduate members
- Increased tutee enrollment by 4.1x in the first quarter, formalizing partnerships with local Chicago schools

### Monte Carlo Simulation for Options Pricing

September 2024 - October 2024

- Simulating  $n$  discrete paths that the price of a financial asset can take over time given an array of forwards, computing the theoretical values of derivatives under the simulated distribution (NumPy, Pandas, Matplotlib)

### TutorPages (TreeHacks 2024)

February 2024

- In a team of two, participated in TreeHacks, Stanford University's premier 36 hour hackathon
- Developed a tutoring service infrastructure, including website and algorithmic tutor-student matching software

### Uplift Game

November 2023 - December 2023

- Implementation of Uplift: includes game logic, a TUI, matrix and bits-based implementation of the game board
- Tools used: C, pthreading, criterion, bit-packing, pointers, structs, git, GitHub Actions, Linux command-line

### Reversi Game

April 2023 - May 2023

- Implementation of Reversi boardgame, including game logic, GUI, terminal-based interface, bot, and tests
- Tools used: Python, pygame, pytest, try-except blocks, inheritance, git, GitHub Actions, Linux command-line

## SKILLS & INTERESTS

**Programming Languages:** C++, C, C#, Python, R / RStudio, Processing 3, C++/CLI

**Packages:** NumPy, SciPy, Pandas, SymPy, Pygame, pytest, Matplotlib, OpenVDB, VTK Visualization, OpenMP

**Software:** Visual Studio, Git, GitHub, TFS / Azure DevOps, ANSYS Discovery, ANSYS SpaceClaim / CAD, Google Analytics, Google Data Studio, Google Workspace, Excel, PowerPoint (Microsoft 365)

**Languages:** Native fluency in English and Russian, intermediate French

**Interests:** Trail running, education, engineering, design, problem solving, finance, technology, research, AI / ML