

Roma Bhattacharjee

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PERSONAL STATEMENT

I have always been drawn to intellectual challenges. I am fortunate to have done well in school—in academics and in sports—and have excelled in every class so far. I am part of the University of Chicago Laboratory High School science, math, robotics, and volleyball teams. I am also a member of the Student Council. I have been most passionate about computers, programming, and robotics from an early age and have been exploring its interdisciplinary applications. I spent my last two summers interning: at Citadel (2019) in financial equities data engineering; and at the University of Chicago Department of Radiology Giger Lab (2020) in radiomics—computer aided detection and diagnosis. I also enjoy solving Project Euler, USACO, and Google Code Jam problems in my spare time, as these challenge my mathematical and algorithmic thinking. Additionally, I love creating projects for myself from concepts I read about; here is a link to some of my fun projects: roma0615.github.io

Standardized Test Scores: SAT 1590/1600 [Aug '20], ACT 36/36 [Dec '19], PSAT 1500/1520 [Oct '19], National Merit Scholarship 2021 Finalist: 224/226, 2021 Semifinalist for U.S. Presidential Scholars Program, SAT Math 2: 800, SAT Physics: 790, AP Computer Science: 5, AP Physics 1: 5

EXPERIENCE

Applied AI/ML at UChicago SAND Lab, Chicago

Summer Research assignment [June 2021 – Present]

- ❖ Recently selected for a research internship at the University of Chicago SAND Lab (Security, Algorithms, Networking, and Data) through the Center for Data & Computing (CDAC) Summer Lab program. I will be working with Professor Ben Y. Zhao.

Computer-aided Diagnosis/ Machine Learning/AI at UChicago Giger Lab [\[Link\]](#), Chicago

Summer Research assignment [June 2020 – Present]

- ❖ Assist Dr. Karen Drukker, Dr. Deepa Sheth, and Ms. Lindsay Douglas (PhD candidate) at Prof. Maryellen Giger's Lab at the Dept. of Radiology, University of Chicago.
- ❖ Assigned to project on quantitative radiomic analysis for abbreviated/ultrafast breast MRI. Radiomics is high throughput conversion of images to mineable data that can be viewed as descriptors of tumors and "normal" tissue.
- ❖ Wrote and submitted abstract to the Optics and Photonics organization SPIE's Medical Image Conference on comparing breast lesion segmentation methods, some of which utilized convolutional neural networks. Delivered an oral presentation in February 2021.

COVID Alliance [\[Link\]](#), Chicago

Software Engineering Volunteer [April 2020 – February 2021]

- ❖ We are a not-for-profit organization connecting governments, public health organizations, and health care providers with best-in-class experts across science, policy and technology.
- ❖ Assist in software engineering: extract/transform/load data processes (Airflow, PostgreSQL), Django development

Carbonless Community [\[Link\]](#), Chicago

Chief Technology Officer [May 2019 – Present]

- ❖ We are a group that assists like-minded communities in taking easy and thoughtful measures to reduce their carbon footprints.
- ❖ Assist in conducting reverse auction for renewable energy and carbon offsets
- ❖ Developing "Carbon Emissions" game for encouraging energy conservation habits

Citadel LLC [[Link](#)], Chicago

Intern at Equities Data Engineering Team [Jun – Aug 2019]

- ❖ Developed usage tracking architecture. Built “milestone” dashboard to track ETL processes. Gained experience with Kafka, Postgres, REST APIs, Flask, Airflow, Grafana, InfluxDB, and Docker
- ❖ Delivered a “lunch and learn” talk on Kafka to the department
- ❖ Evaluation/feedback from my manager: *“What makes Roma stand out is her willingness to take on something unknown and her ability to learn it through doing research ... Her willingness to take on a new problem where she lacks the domain knowledge and build that knowledge without hesitation will make her an exceptional engineer in the future.”*

Self-directed Programming Projects

- ❖ **JavaScript:**
 - Multiplayer Ultimate Tic Tac Toe game with Node.js and Socket.io (for fun)
 - Hackathon (“HackNow”) competition: real-time lists with Node.js and Firebase
- ❖ **Python:**
 - Automated trade execution application with PyQt5 (for a client)
 - Personalized debate timer application with PyQt5 (for my debate team)
 - Handwritten digit classifier with TensorFlow (for fun)

EDUCATION

University of Chicago Masters Program in Computer Science (MPCS), Chicago

Non-degree-seeking high school student

- ❖ Courses: iOS Application Development (Grade: A); Algorithms (Grade: A); Introduction to Software Engineering (enrolled)

University of Chicago Laboratory Schools, Chicago

Junior, U-High, Class of 2021, GPA 4.0/4.0

- ❖ Brian Swan award for AT Physics I (awarded to student who best demonstrates mastery of material and an excellent teaching ability)
- ❖ Eunice McGuire English award semi-finalist
- ❖ Partial list of courses: AT Physics I & II; Biology; AP Computer Science; Computer Architecture; Discrete Mathematics; Artificial Intelligence & Machine Learning; Independent study in Structuralism & Semiotics; AT Economics; Linear Algebra/Multivariate Calculus
- ❖ Member of Science, Math (qualified for AIME 2020), Robotics, F1 in Schools, and Varsity Volleyball teams; 1st place in Regionals Academic Challenge Computer Science
- ❖ Executive Board of Student Council (Director of Technology), debating team (Novice), Vice-President of Girl-Up Club, Board of Artsfest, and tutored a middle school student

Latin School of Chicago, Chicago

JK through 8th grade, Class of 2021, GPA 4.0/4.0

- ❖ Highest GPA award; Science award; Isabelle W. Lawrence Humanities award [[Link](#)]
- ❖ Member of Math team and Science Olympiad team (team captain)
- ❖ Member of a robotics club
- ❖ Participated in small roles in school plays

SUMMER CAMPS

Johns Hopkins CTY Summer Program — Fundamentals of Computer Science, Intensive Study Course [2017]. Co-wrote a walkthrough guide that explained concepts of a programming library we explored in class. Instructor used it to teach peers and future students.

Summer Institute for the Gifted — Macroeconomics, Surgery, Pre-Calculus, Art of Propaganda [2018]

MUSIC

I have been playing the piano since I was 4 years old. I have completed all 12 levels of the Achievement in Music (AIM) program. I have also played the trombone in the school band from 9 years of age.