My mission in graduate school is to utilize my passion for computer science and machine learning to benefit society at large, while serving as an example of success that will shape the future of our society. Even though I grew up with my mom, grandparents, and older brother, I was very much on my own. My mom was extremely self-centered and irresponsible, stealing thousands of dollars from my grandparents by forging their signatures. When I was born, she was incarcerated in the Monmouth County Correctional Institution and declared mentally insane by the FBI. Because she was unfit to take custody, and my father left before I was born, I was put into foster care and later adopted by my biological grandparents. Although my grandparents had a big heart for attempting to adopt my siblings and me, they didn't have much left to give us. I grew up extremely poor; when my high school had a food drive, they delivered a box of food to us.

Science and technology provided an escape. Glued to the television, I watched hours of the Discovery and Science Channels. From this humble curiosity grew my zeal for computer science. I went from being remedial in English and mediocre in math to second in my class, taking every computer science class my high school had to offer. As my skills grew, I realized that I could touch the lives of thousands and even millions of people around the world with just a computer and Internet connection.

My passion and drive solidified during my time at MIT. Throughout my degrees, I sought opportunities that would increase my perspective of the world, develop my skills, and make an impact. In doing so, I have improved my skills as an engineer, entrepreneur, and researcher by solving diverse problems occurring from the conception to the implementation of an idea and connecting with people from around the world. I have traveled to over 15 different countries and worked on projects that touched the lives of many.

After my junior year, for example, I moved to Zurich, Switzerland, where I interned at Google as an Associate Product Manager for YouTube Analytics. There I led the launch of "Time Watched" as a primary metric for video creators from around the world, and crafted the initial prototypes for playlist analytics. Since my initial efforts, Time Watched has surfaced on numerous areas of YouTube, including the consumer-facing side of the site. My plans for playlist analytics have also come to fruition and become an invaluable part of YouTube Analytics. More than ever, video creators and curators have the information needed to produce better content for viewers across the globe.

Once I went back to MIT, I served as the president of MIT's chapter of Eta Kappa Nu (HKN) Honor Society for two years with a mission of making the EECS department even better. During my leadership, HKN maintained a course reviewing system, tutoring program, and resume book for the entire EECS department. I also spearheaded a number of new events in order to develop a stronger community amongst the undergraduates in the department, ranging from salary negotiation workshops to biweekly study breaks. I was also a member of the Undergraduate Student Advisory Group for EECS since its creation three years ago. As part of the committee, I helped shape the new Super Undergraduate Research Opportunities Program, the EECS Workshop for Entrepreneurs, and the EECS student lounge.

During the past year and a half, I have been fortunate enough to be a part of the MIT Office of Digital Learning. This has allowed me to utilize my skills in computer science and machine learning to advance education by investigating the many motivations at play amongst the thousands of participants in MITx and HarvardX Massive Open Online Courses (MOOCs). Collaborating with a cross-institutional and interdisciplinary team of graduate students, post-

doctoral researchers, and professors from the fields of Computer Science, Statistics, Psychology, and Education gave me a unique and holistic perspective on the challenges in digital learning.

Drawing on my studies in machine learning, I complemented my team's expertise by bringing fresh perspectives and techniques. I saw parallels between problems faced in Natural Language Processing and understanding the diverse behavior in MOOCs. In particular, as I learned about Latent Dirichlet Allocation (LDA) an analogy jumped out at me. LDA is traditionally used to uncover the latent topic structure of an uncategorized collection of documents in order to extract semantic meaning and summarize the documents. MOOCs have a similar problem with student behavior. The large populations taking these courses include students with a diverse set of backgrounds and motivations, yet this information is completely opaque to course instructors. Even if they knew this information about students, interpreting the results would be too daunting a task for educators to handle. By forming an analogy between documents and students in a course, I saw that LDA could serve as a way to uncover the latent behavioral structure of students, distilling individual access patterns into the most salient trends.

Intrigued by this potential, I spearheaded an adaptation of Latent Dirichlet Allocation from Natural Language Processing to User Modeling in an effort to automatically find and characterize subpopulations in MOOCs. My approach transformed low-level and high-dimensional clickstream information into a collection of high-level probabilistic use cases that captured distinct behavioral patterns while preserving valuable statistical information. The resulting use cases directly provided insights about trends in student behavior, illustrating how students actually use the course. They also formed the basis for a lower-dimensional representation that improved predictive performance on learning outcomes. In turn, better predictive performance means we can more accurately detect struggling students and intervene or even recommend people to work together.

The most valuable part of this research experience for me was having the freedom to employ the scientific method to tackle an open-ended problem. My advisor gave me tremendous freedom in finding a novel idea that mattered to me, which was a mind-altering shift from the rigid requirements and relentless work from my undergraduate degree. I finally had the opportunity to ponder what I wanted to do and how I was going to do it. I could once again be the explorer I had been as a kid, free to embrace my curiosity and filled with naïve optimism for what is possible.

This curiosity and naïve optimism enables me to do the impossible. I went from being born in a prison to graduating from MIT with a 4.9 out of 5.0 GPA and being elected president of the department's honor society. My passion and perseverance enabled me to help and inspire thousands through my deeds, as evidenced by the products I have launched and the students I have helped. As a part of Stanford University, I can maximize my impact and the university's by leveraging my prior knowledge in machine learning and digital learning to create breakthroughs in education that will benefit society at large. Stanford has already made great strides in this direction. As an aspiring entrepreneur, I envy the determination of Stanford alumni as they have founded numerous educational technology startups, including Udacity, Coursera, and NovoEd, delivering quality content to people around the world. As a budding researcher, groups like the Lytics Lab, which aim to tackle problems in education that are both practical yet generalizable to a wide range of subject areas, resonate with my goals of having an immediate impact that shapes the future of our society. By joining the academic and entrepreneurship ecosystem at Stanford, I can stand on the shoulders of giants and scale up the transformational process I went through.