Pursuing my undergraduate education became a battle of studying conflicting disciplines, ranging from international affairs, more broad social sciences, and the somewhat stoic nature of computer science. While on the surface they may occupy completely different spaces within academia, I have come to find out they have more intersections than what I originally thought. Consequently, my interest in the interdisciplinary nature of the subjects I come to know about as I move further through my education became heightened. Penn State's REU program caught my eye at the right time, as I needed an outlet to express and research topics that align with my current studies and the topics I want to learn more about. Being a self-taught coder can be limiting at times, mostly due to the fact that I have little structure and opportunities to apply my conceptual, abstract knowledge to substantial, long-term projects. Fortunately, this program on machine learning and cybersecurity fills this niche with great precision, even going as far as having little barriers to entry to assist in research, a benefit that is not seen in many similar programs. Participating in research through the university will propel me into the future, hopefully filled with helping in software development and technical research. But even after that, I can gain the necessary skills to do well in interdisciplinary Ph.D. programs across the country. Whether it be at Northwestern studying Technology and Social Behavior, at MIT examining Social and Engineering Systems, or building my own program at UC Berkeley, all of these programs are reliant on the knowledge I gain through undergrad and this fellowship gives me that ten-fold. Stretching far into the future, alleviating the world's issues through my own ferver, determination, and passion is the end goal for me. This can be achieved by working at tech companies, like Snap Inc. or Microsoft, starting my own venture, or even making strides in the civic-tech space. But, I can't achieve these goals without taking the first step into computer science spaces, and I know Penn State and its associated faculty will welcome me with open arms.

As I took more classes within my major of International Studies, I have come to understand the changing nature of the discipline. Following the late 20th century, scholars within political science, economics, and even sociology were attempting to make these fields of study more of a hard science, breaking away from the perception that they were only meant to be viewed as qualitatively-focused subjects. Consequently, an increasing number of papers being published were utilizing new methods of analysis that were adopted from their STEM counterparts, ranging from the use of object-oriented programming languages to automate processes to ease the mundane nature of analyzing large sets of information to machine learning methods to push the boundaries of knowledge that could be found within the discipline. The latter immediately caught my attention as the subjects of data visualization, language processing, and predictive models greatly intersected with my research interests. When it comes to the real impact of quantitatively-focused inquiry within the social sciences, we can sometimes forget that these subjects are political and nature and are used to explain the world around us. We are all drivers in this complex system who rely on academia to challenge our preconceived notions of what should and shouldn't be, and machine learning algorithms are only there to make this acquisition of knowledge easier, however, there seems to be a separation between the two. I

became interested in machine learning for this purpose of uniting the political and non-political through my research. Studying the real side-effects of structural inequality with the aid of algorithms is of utmost importance to me and will guide my work for years to come. This goes hand in hand with my interest in cybersecurity, as I've been actively helping in a socio-technical research lab dedicated to improving machine learning algorithms to detect online risk for teenagers and young adults. Moreover, the real impacts of cybersecurity are strictly political, guiding states to either interact diplomatically or militarily. It can take even more forms as well, whether that be through the spread of false information, the volatile nature of cryptocurrencies, or the attacks of physical infrastructure by digital means, the wealth of knowledge that is brought with studying cybersecurity is endless. Intersections between my research interests is what keeps me motivated as a student and I want to bring this drive and tenacity to Penn State, assisting in projects that seek to fill in the gaps within academic conversations.

My ultimate goal at Penn State is to sharpen the skills I already possess and gain new ones along the way. However, it goes deeper than that. I will use the skills I have acquired to build my own project for the interdisciplinary thesis program we have at my university, bridging the gaps between international relations, sociology, and computer science to study global events and build on theories set by scholars before me. Additionally, I want to make a meaningful impact on the projects that I am matched with, as some of them call upon my own interests of the societal impacts of the expanding reach of technology. Reading the likes of Safiya Noble, Virginia Eubanks, and Taina Bucher, have opened my eyes to the grim reality of the essentially encapsulating nature of technology on contemporary society, inevitably bringing my attention to Ben Hanrahan's work detailing the current societal impacts of non-optimal algorithms. The works also brought my attention to digital politics, which aligns with the interests of Sarah Rajtmajer and Suhang Wang. All in all, my goal within this program is to give my own perspectives on the implications of machine learning and cybersecurity for the most vulnerable populations. Those who control knowledge have power, and I want to reverse this trend — and participating in this REU at Penn State does this wholeheartedly.