Peter Krafft: Personal Statement

In the summer of 2005, just after my 10th grade, I knew I was going to drop out of high school; I just didn't know what I would do afterwards. Nevertheless, my mother insisted I continue my education. That fall I started at the nearby Massasoit Community College taking only three classes. Being at Massasoit changed my attitude. It had an entirely different atmosphere from my high school. I was surrounded by responsible people, young and old, all of them trying to improve their lives. That semester marked the beginning of a tremendous change. Understanding these other students—their own difficulties and dedication—inspired me to take my education seriously and to become a contributing member of my community and my society. By my last semester at Massasoit, I was taking seven courses in order to graduate on time while working as a peer tutor in the Academic Resource Center; I was selected as the commencement speaker for my graduation; I was named Massasoit's Community College University Scholar, a competitive $20,000 scholarship to any Massachusetts state school; and at 17, I was the youngest member of my graduating class. **Since then I have dedicated myself to learning, teaching, and community service.**

Learning:

Following the advice of one of my teachers from Massasoit, I chose to be a mathematics major as an undergraduate, though I also took classes in psychology, statistics, and computer science. Due to my success in these classes as well as my participation in several research projects, upon graduation **I was honored as a 21st Century Leader, a competitive university-level award**. I then had the opportunity to further pursue my research interests as a Bay State Fellow in my school's computer science department.

My research interests evolved from my experiences with Prof. Michael Lavine whose steadfast dedication to the principles of Bayesian statistics inspired me in the graduate courses I took with him in my second year at university and later in the research I did with him and another undergraduate student. Because of his influence, **my main research interest is in developing and applying methods from Bayesian statistics.** For most of my undergraduate career I was primarily interested in applications to cognitive psychology and neuroscience, but **I recently became interested in political science applications** as a result of my collaboration with Prof. Hanna Wallach, an expert in Bayesian models for text data. Prof. Wallach introduced me to the new field of computational social science, an area which offers the excitement of participating in an emerging field and the opportunity to deal with problems that are directly relevant to society. As a result, **I am now doing research in quantitative political science that is the most substantial and potentially influential work I have done so far.**

During my PhD, I want to continue my work on developing Bayesian models for political science applications. Stanford University is ideal for pursuing this goal. In the linguistics department, Prof. Daniel Jurafsky applies natural language processing methods to social science questions. In the computer science department, Prof. Jure Leskovec does theoretical work in network analysis closely related to my proposed research. In the political science department, Prof. Justin Grimmer does great work in applying Bayesian methods to political science questions, which is exactly in line with my research goals.

Teaching:

I have sought out teaching positions ever since I was a peer tutor at Massasoit. In fact, **I started teaching in my second semester at university, and I held an undergraduate teaching assistant position in every remaining semester of my undergraduate program.** Furthermore, this semester I am the teaching assistant for the graduate machine learning course in my department. In both my undergraduate and graduate positions, I have always tried to teach passionately and effectively, and I believe this has benefited both my students' understanding and my own. By studying the methods of the lecturers I most admire, notably Prof. Farshid Hajir and Prof. Michael Lavine, I decided on four characteristics important to good teaching. I try to *balance* giving extra help to students who struggled and giving challenging problems to students who excelled. I achieve *clarity* by using simple examples, giving visual explanations of abstract concepts, and using mnemonics when memorization was necessary. But I will not sacrifice *detail*, so I show all the background and logical steps for an idea while alluding to more advanced topics. Finally, by *experimenting* with different explanations and presentation styles, I constantly improve the quality of my teaching.

Community Service:

My most notable community service experience began in my second semester at university while I was still primarily interested in cognitive science. I noticed that there was no social group for students interested in neuroscience at my school. To solve this problem, **I founded a neuroscience club on my campus dedicated to introducing undergraduates to neuroscience-related research, to fostering community outreach, and to educating high school students about neuroscience.** With the help of my officers, I turned this club into a popular and well-established part of the psychology department. Founding and maintaining this club gave me valuable practice as an organizer which has recently been useful in helping my advisor and her co-organizers coordinate the Second NIPS Workshop on Computational Social Science.

Broader Impacts:

At my community college, I was surrounded by students from diverse economic situations and over a hundred different nations. Furthermore, my current lab consists predominately of women, an extremely unusual occurrence in computer science, which is a field dominated by men. From these experiences I have observed how new cultures and people who think differently can bring new ideas to a discussion. Also, because of the people I met in community college and the state school system, I understand the importance of these federally-funded institutions in building their surrounding communities and in giving motivated but disadvantaged people a chance at contributing to society. Moreover, **I hope to soon be in a position that I can use to give back to these institutions and help disadvantaged people who are on their backs get back on their feet—whether through financial support, through teaching, or through a mentorship program.** The prestige of an NSF fellowship as well as the flexibility it would afford me in my graduate program would help put me in such a position.

Thank you for your time and consideration.