

Jacqueline Kory – NSF GRFP 2011 Application Materials – Personal Statement

I am going to grad school because it is going to be fun.

I fully expect the next five or six years to be the most challenging, stressful, and demanding years I have ever experienced. I expect my advisers and mentors to push me harder than I had thought possible. If the current grad students I have talked to are to be believed, I will feel overwhelmed and out of my league.

For a little while, at least.

I thrive on challenge. Given a problem – be it "these robots need to autonomously explore unfamiliar terrain" or "research something cool for your undergrad thesis" – and I will be the one up until four in the morning because tackling the problem, outlining research plans and possible solutions, is too exciting to take a break to sleep. When I got the first data sets from my undergraduate thesis project, I spent the next day solid analyzing the data and writing up sections on the results – not because I had a deadline, but because I personally wanted to know how the data shook out. Even on days when results are a far, distant goal, when the code I am writing has incomprehensible bugs, when it feels like my project could never possibly succeed, I will keep at it. Frustration cues me to work harder, not to give up.

In my undergraduate career, I maintained a high GPA of 3.87 (of 4.0), graduating with both general and departmental honors. I was one of a small number of Vassar seniors to be elected as associate members to Sigma Xi, and I was inducted to Psi Chi my junior year. I got involved in research on campus my freshman year with Dr. Ken Livingston, continuing to work with him my entire time at Vassar. I spent a year as the editor of Vassar's *ScienceWorks* publication, a multidisciplinary newsletter about current on-campus research. I sought out research opportunities off-campus as well, learning about engineering projects at NASA and psychological research at the University of Sydney, Australia. I live by the rule that I will never be done learning. My path has always been that of novel experiences, continuous questioning, and crossing lines to combines research across disciplines.

As a woman in computer science and the first in my family to attend graduate school, I understand both the importance of education and the importance of having role models and mentors in one's own field. Dr. Jennifer Walter, my mentor in Vassar's Computer Science department, encouraged me to tutor for the department – which I loved. I had been a independent math tutor for a number of students in high school, as well as spending a summer as a teacher's aide for the Educational Talent Search program, and was delighted to return to teaching. I spent two years as a tutor for the introductory CS classes. Dr. Walter also urged me to attend the Grace Hopper Celebration of Women in Computing, a conference that promotes women who pursue technical careers and gives those of us who have already decided to work in technology and science the guidance and community we need. I attended twice and plan to attend again. I think it is important to increase the participation of girls in STEM fields even before they're thinking about careers, which is one reason why I plan to aid in the development of science education tools in my graduate research. I also plan to get involved in regional FIRST Robotics programs, volunteering specifically for young girls' teams. My own participation in a similar tech challenge during high school was a key factor in choosing my course of study later on.

At Vassar, I participated in the Annual Robot Competition three years running – twice as a member of a competing team, then as the teaching assistant. The first two years, my team pooled our skills to design, build, and program a small mobile robot to successfully navigate a color-marked maze. We used a webcam and simple vision. The third year, I got to help teams

Jacqueline Kory – NSF GRFP 2011 Application Materials – Personal Statement

debug their robots' software and hardware problems, sharing the experiences I had gained with the next generation of cognitive science and computer science majors. Currently, at the Institute of Intelligent Systems at the University of Memphis, my labmates have requisitioned me for Friday afternoon CS class. The four of them are psychologists by training, so we trade knowledge: I help with programming, they make sure I get the ins and outs of experiment design and data analysis.

I was also a member of the Varsity Women's Fencing Team at Vassar my entire undergraduate career. I co-captained the team as a senior. In addition to leading the team in drills and sparring during practices, I organized team-building events and mediated conflicts between teammates. My sophomore year, after stepping up to lead the struggling foil squad after the graduation of the squad captain, I was awarded the Milligan Award for Outstanding Service to the Team. I was a three-year member of the Student-Athlete Advisory Committee, which not only facilitated communication between students and the athletics administration, but also fostered programs for community involvement. For example, we hosted the biannual Kids' Night, inviting families from the area to Vassar for an evening of sports, with our student-athletes as the kids' new favorite role models. I also helped charter Vassar's student-athlete Academic Success Program. This program is geared toward helping underclassmen adjust to college life and learn to balance academics and athletics, pairing underclassmen with senior student-athlete mentors who have been there and know how to deal.

I want my research to have real world impact. Under Sidney D'Mello's mentorship at the Institute of Intelligent Systems (IIS) this year, I am developing a clear idea of how I can pursue this through advancing science education and studying emotions during learning, emotion regulation, intelligent tutoring systems, and adaptive agents. The most rewarding work I have done previously generally had the most benefit for others as well: At NASA Langley, the autonomous vehicle facility I helped establish is now allowing scientists and engineers to safely test autonomous multi-vehicle systems. At NASA Goddard, my team developed a proof-of-concept autonomous robot team that could explore and map areas unfriendly to humans, such as disaster zones, asteroids, and other planets. Several intelligent tutoring systems developed by the IIS are now being tested in the Memphis school system and will later target underprivileged populations.

Graduate fellowship support from the NSF would allow me to dedicate more time and energy to my research, as well as potentially connecting me to future collaborators. The prestige of an NSF fellowship would also aid in reaching my later career goals: I intend to continue work on problems in science education after I earn my PhD, as a researcher at a university, in a national lab, or at NASA. I aim to lead a team of scientists and engineers in developing adaptive systems that are responsive to humans and human emotions – such as tutoring systems and training programs – as well as developing methods for emotion regulation during learning, tools for teaching emotion regulation techniques, and ways of encouraging engagement during learning.

I am excited to collaborate with and learn from the wider research community. This past October, I worked the Affective Computing and Intelligent Interaction conference hosted by the University of Memphis. It was my first big academic conference. In between manning the registration desk and providing tech support for the speakers, I attended as many talks as possible. The last day, there was a panel on the future of affective computing. Being in a room full of scientists, all of them excited about the field, all of them full of energy and new ideas, all discussing how best to move the whole community of research forward, was so inspiring. I want to contrib-

Jacqueline Kory – NSF GRFP 2011 Application Materials – Personal Statement

ute. An NSF fellowship will help me get there.