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NSF GRFP Application
Personal Statement

My love of technology started at an early age. I was never content to just play computer games and stay within the lines. I always wondered why things worked the way they did, how they could be made better. I first taught myself programming modifying software on the family computer, and I continually experimented with new possibilities. When I became old enough, I became obsessed with Science Fair, eager to expand my own knowledge and rigorously discover new things. While classmates were testing the durability of competing brands of paper towels, I was testing alternate ways of constructing logic gates and investigating mathematical models of language evolution. I stuck with Science Fair long after it ceased to be a requirement, and while my classmates didn't understand, I loved the opportunity to develop new ideas, test them scientifically, and share them with the world.

At the same time, I was getting my first taste of working not just independently, but with others, and the leadership issues this generated. I saw many examples, in school, the Boy Scouts, and elsewhere, of leaders who lead by command and were not interested in the opinions and viewpoints those "under them", who were convinced that due to their experience or position that they held all the answers, who would not tolerate different approaches. That whole attitude repulsed me. I resolved that I would not be like them, and when I got my chance to assume leadership positions in my troop, I made efforts to lead by example, to listen to and work with those around me, to accept and build with diverse viewpoints to reach a greater understanding. My approach made me a popular and successful leader in the troupe, eventually leading me to become an Eagle scout. I learned that a leader does not have to have all the answers or to lead only by command. By guiding and working with those around me, I helped them learn and grow and not just do, and I learned from them as well. This leadership style has served me well since then in leading student groups, dealing with the administration, and working with and leading research teams, and I hope to continue to use these skills in my fellowship research.

When I first studied and later worked in Japan, I did not just marvel at the differences around me; I was struck by how many of my own assumptions were erroneous and limiting. In trying to understand how another culture viewed life, the world, and particularly the role of technology, I both broadened my own horizons and realized the value of diverse collaboration. Joining diverse viewpoints, whether from different disciplines, different backgrounds, different experience levels, or different cultures allows us to overcome limitations we might never have seen otherwise and better move towards greater understanding of the world around us. Especially in the complex, dynamic, and only partially understood world computers bring us, it is too easy to be convinced that your way of doing something is right, that certain fundamental system properties always hold, or that certain properties are the desirable ones in your system. Diverse viewpoints help us break free from this, and that is one reason I am grateful for the diverse opportunities I have had both inside and outside of MIT and will work to continue to develop in the future.

The ease in Computer Science of sharing developments to a wide audience and helping people directly has always attracted me to the field. Computers give us unique abilities to share the benefits of research, not just with other researchers and eventually to the public through commercialization or popularization, but directly, interactively, and bidirectionally. The ability for companies, universities, and independent hobbyists to collaborate on an equal footing on open-source development

is a powerful methodology. When I see the results of my research for OpenLayers being used by agencies to further the causes of human rights or monitor disasters, far beyond my original expectations or desires, it gives a whole new level of meaning to my work. Discovery, understanding, and elegance are their own rewards, but the ability to bring real benefits to others who I may never even have met is even more rewarding.

I see many possible paths before me for my career. I could continue to do pure research in academia, developing new systems and working to bring them to the world from there. I could return to corporate R&D, using the constraints and focus that corporate goals have to catalyze and direct my searches for better ways of doing things. I could even see myself, if circumstances permitted, spinning off my research into a startup, using this as the best way to both fully develop my systems in dynamic but practical ways and also to spread their benefits to the world. In any case, I know three things for sure. I will always feel the drive to create new and better designs. I will always seek to associate and collaborate with as wide a variety of others as possible to allow my research to reach its full potential. Finally, I will always work to keep my research grounded in reality and widely available to help real people deal with real problems. With these principles in mind, I am confident that I will find a rewarding course in life whatever opportunities or obstacles come my way. I see the NSF fellowship as an excellent start to this course, as it will allow me unique research opportunities and resources to pursue them and the freedom to focus solely on making the most of my research without practical limitations getting in the way. With this start to my life of full-time research, I see great possibilities in store.