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Statement of Purpose

of Jeremy Hurst (Lehigh University Computer Science M.S. applicant for Fall—2016)

For the past three years since graduating from Earlham College with a BA in Computer Science, I've enjoyed working as a Software Developer, but I've been eager to continue my education and pursue my continued interest in robotics research.

My interest in robotics goes all the way back to middle school when I joined a lego robotics team. After seeing my lego mindstorms bot complete complex tasks after hours of refining its algorithm in a drag and drop block programming interface, I was hooked. Later when I was in high school I joined an FRC robotics team and became so heavily involved that I was elected captain of the team for my final two years.

For my computer science senior project I set the ambitious goal of developing a real time hand gesture recognition interface for controlling a flying quadrocopter drone. Despite working with a partially broken API and poor documentation (mostly in french which I don't speak and have not studied), I completed the project by the end of the semester. For my final presentation, I was able to demonstrate a fully functional drone which responded correctly with unique behaviors to real time hand gestures.

Since my senior project introduced to me the complexity of computer vision, I admire those who are able to successfully apply it toward a fully functional and potentially useful product. I'm impressed with the success that the VADER lab has had with 3D mapping projects. I'm very interested to learn how Lehigh has such an active robotics program and I'm eager to become involved.

I've followed graduate level robotics challenges such as the DARPA challenges and RoboCup soccer. The VADER lab at Lehigh sticks out to me as an active program with a diverse variety of interesting research projects which participates in many challenges despite the school's size. I've been eager to become part a graduate level robotics program which participates in robotics challenges and competitions and Lehigh appears to be the perfect place for me to do so.

The research I did with the Theory of Computation group at Earlham College focused on developing computational models to describe string sets of phonetic stress patterns in human languages and toward the end of our work we published the paper "Cognitive and Sub-regular Complexity". It was accepted and published into the Formal Grammar chapter in the Lecture notes on Computer Science and to date has been cited by 11 other papers.

My freshman year, I decided to major in Physics in part due to my interest in engineering from my experience with robotics, and because physics was the high school class that I enjoyed the most. After taking the introductory computer science course my sophomore year I discovered I had a passion for programming. The gratification I get from fully understanding a complex system and then applying that knowledge to bring a theoretical mechanism to life is extraordinary. It made my decision to add Computer Science as a double major natural and post graduation, it encouraged me to pursue a career in software development.

The workload of attempting to complete the double major in four years proved to be extreme and my GPA suffered from it my sophomore and junior year. By my senior year I had already completed a Physics minor and I decided to switch my focus completely to Computer Science and dedicate myself to finishing the major. After I made the switch, my GPA raised to 3.27 while I was taking a heavy load of high level Computer Science courses.

The result is that I am left with a GPA which at first appears non competitive. I believe a closer inspection of my transcript will reveal that I am an extraordinary student who is passionately interested in many subjects, that I am able to make tough decisions, and that I can dedicate myself to large sums of work in order to complete my ambitious goals.

Since graduation, I've had the pleasure of working on a variety different interesting projects ranging from writing webcrawlers in perl to writing an http proxy server which selectively rewrites content for testing scenarios that are hard to reproduce. I've had to learn advanced programming techniques such as metaprogramming to modify ruby objects during runtime and pass blocks of code as arguments to clear up syntax for tools other developers use.

My success as a software engineer demonstrates my abilities to learn how to use new languages and tools effectively and apply them toward completing complex tasks expeditiously. The skills that I've

learned and the work ethic that I have gained guarantees that I will be valuable to any research team.

My experience from participating in a research group which published a paper has excited me about the process and results of doing research. It has prepared me for the effort required to discover something new, consolidate documentation about it, and publish it.

I've had a burning desire to continue my education and participate in research again ever since I graduated from Earlham. I've researched graduate schools all across the country and I know with absolute certainty that Lehigh University is the institution where I want to continue my education. For this reason, Lehigh is the only graduate school that I am applying to for fall of 2016.

Please consider my application. I believe for the reasons listed above that I am an exceptional candidate, that I have valuable skills and experience which I will contribute to the department, that I will dedicate myself to succeeding as a student, and that I am worth accepting.

Thank you for your time and consideration.