Ayden Diel

CSM Undergrad Research Fellowship Application

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For the past few years, programming and computer science has been an increasingly large part of my life. I've had the opportunity to work for startups, do research with different professors, plan and host hackathons, and most recently I've started an internship at Fidelity Investments as a software engineer. As I've gotten more and more interested in programming, I've realized that the most interesting work is usually done within research labs, and thankfully UMass Boston has several. The CSM Fellowship will help me get the opportunity to immerse myself in a research environment working with cutting-edge technology that I'm very eager to contribute to. My hope is that this research experience will set me up to pursue a graduate degree so that I can focus on the problems in computer science that interest me the most.

My particular area of interest is parallel computing and its implications for advancements in AI. As you probably know, the past few years have seen incredible advances in the capabilities of AI models. These advancements depend heavily on the ability to write efficient programs that can leverage GPUs to parallelize the massive amount of computations needed to run and train these algorithms. For me, the way that software integrates with hardware has always been fascinating, so working on the problem on parallel computing seems like a very interesting entry point to the world of artificial intelligence.

My CSM faculty mentor is Tiago Cogumbreiro, with whom I've worked with in the past. Tiago's research lab focuses heavily on making parallel computing (CUDA programs) more efficient and bug free. Working with him in the past I focused more on the program analysis part

of the research lab, but from seeing the research presentations put on by others working in the lab, I felt very motivated to get involved in the CUDA programming side of things.