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Masters of Science in Computer Science

I took my first programming course at the University of New Hampshire in the Spring of 2018 and quickly discovered that I was among the worst programmers that I had ever met. I can remember quite well sitting down with my fellow physics undergraduates multiple times per week while they had to walk me through line after line of beginner level Python 3 material. I could not bring myself to understand the logic of programming - of taking any task and breaking it down into a series of fundamental instructions to be executed by a computer that would do so without question. I figured that programming would be a skill like any other and come to me like playing guitar or writing did nearly years earlier- proficiency would come simply with study and practice.

By the middle of the fall 2018 semester I was still incapable of writing most programs for the course without the assistance of my peers and being early in freshman year, I was too afraid to seek help and office hours or lay my vulnerabilities out to any tutor. To make matters worse, despite having an underwhelming academic record, I had weaseled my way into my first research position in the Physics department at UNH, which was entirely based in numerical processing with Python. My ability to program proficiently was no longer just the matter of a few grades in the classroom, but was not going to be the basis of many career building skills – the stakes had been raised.

It wasn't until toward the end of the semester, one night well passed midnight, that I had my first or many epiphanies. I was sitting in front of a mostly empty script for the research project that I couldn't do, coping with my situation by taking it out on my electric guitar. I though back to my time learning guitar, and how It changed me, how at one point I was almost a music major, and how playing guitar changed by view of the world. Mostly, I though about how playing guitar and writing music was not just a skill – it was a way of thinking. So too is programming.

By the end of the semester, I was far from an excellent programmer, but I had picked up enough to keep my research position, and pass through my Python class with a reasonable GPA. I continued that project for another year and by the end of it, considered programming to be like guitar – one of my stronger skills. I eventually was able to use my skills to confidently present my research at the 2019 URC. By the time my junior year had started in the fall of 2019, there was no task that I was afraid of, I would constantly ask my physics professors for extra programming assignments. I would construct simulations of multibody solar systems, optical lenses, or anything else within my reach- not because I had to, but because I enjoyed doing it.

The largest change came that same semester when I met Dr. Kevin Short in the UNH math department. I had begun a project that involved the classification of musical instruments using neural networks. It seemed like every wall that I had scaled prepared me for this moment. All of the late nights working on numerical processing, data structures, music, mathematics and physics led me to that point where I could combine my three favorite things- programming, music, and physics. Since then, I have had the opportunity to be a co-author of three papers regarding neural networks, and am preparing to present the result of this project for my BS Physics senior thesis in December 2020.