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Andrea Malloni
HR manager, Human Resources
NVIDIA
Toronto, Ontario, Canada

Dear Ms. Malloni,

I am very excited to learn of the opportunity to work at NVIDIA as a Compute Performance Developer Technology Engineer. I have researched the work and research done at NVIDIA and within the Compute Developer Technology (Devtech) team, and I believe that I have a unique combination of engineering and computer science skills that would add a lot of value to your team and research capabilities.

Ever since I was a child after my Dad gifted me my very own PC, I went to town playing video games and upgrading my PC with each new generation of GPUs. Seeing massive performance enhancements between different generations of GPUs got me thinking about whether all this computational horsepower can be used to simulate the real world instead of just video games. I was thrilled to learn about the release of CUDA in 2007 which enables high performance scientific computing on GPUs. I decided to seek the highest engineering degree possible from a world-class university such as McGill University with an emphasis on computational approaches to solving real-world engineering problems. To my surprise, most commercial simulation software used in engineering did not take advantage of GPU acceleration and relied on CPU parallel processing instead. Engineering structural and fluid dynamics simulations involve a lot of linear algebra which CUDA and cuBLAS excel at. I could not accelerate my simulations using CUDA due to the proprietary nature of such software.

I opted for creating my own simulation programs in C++ where, all linear algebra operations are accelerated using CUDA and was mind-blown by the performance enhancements. I managed to apply the principles of GPU computing to a wide range of problems in engineering, machine learning, and until recently, epidemiological models as well! To the best of my knowledge, I was one of the very first researchers to GPU accelerate agent-based models in epidemiology. I obtained very promising results that predict the spread of COVID-19 in local urban centers using this improved simulation tool. The results have been submitted for publication in a COVID-19 special issue of the IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI). In addition to my scientific computing experience, I specialize in numerical optimization. I have used my knowledge of optimization to not only optimize software but real-world engineering products and systems. I have applied optimization to optimize aircraft, aeroengines and decision-making in operations research.

Combining my background in optimization and scientific computing can add a lot of value to the NVIDIA's Devtech team by optimizing both the software components of scientific computing applications and the hardware architecture of the GPU used to run them. I want to mention that working at a leading AI and computing company such as NVIDIA is a personal dream and goal of mine and I feel that NVIDIA could offer me the opportunity to contribute to this exciting and ever-changing field. I hope that you enjoy perusing my profile and interests and looking forward to the chance to discuss my research contributions with your recruiting team. I also hope to learn as much as possible about the exciting and cutting-edge research being done at NVIDIA!

Yours sincerely,

Khalil Al Handawi