May 3, 2021

Apple, Hardware
Santa Clara Valley (Cupertino), California, United States
Re: Modeling & Simulation Engineer application

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Dear Talent acquisition manager,

I would like to express my enthusiasm and excitement for the opportunity to be a part of the Apple family and work with a technology industry leader. I am a strong believer in Apple's commitment to green and sustainable product design and manufacturing practices. I decided to attain the highest possible degree in a STEM field with emphasis on said design principles to leave this world better than the way I found it. It is through the Apple family that I will be able to achieve such a goal and hence my application for this engineering position.

I believe that my experience during my doctoral studies is well-aligned with the work being done at Apple R&D and the role that I would be filling. My PhD dissertation focused on surrogate modeling of complex aeroengine systems and the use of surrogate-based optimization to explore lots of different designs with relatively low computational effort. I also used advanced data visualization tools such as parallel coordinates and 2D projections of high-dimensional hypersurfaces to communicate results and display them for scientific papers and conferences. This work resulted in a set-based design toolbox for my industrial collaborators at GKN Aerospace, Sweden. The design tools I developed emphasized flexibility and scalability of products for ease of remanufacturing in the future. This helps keep aircraft parts in service for longer periods of time without becoming obsolete. This can drastically reduce the lifecycle cost of such products.

I also worked on public health projects during my doctoral studies and developed an epidemiological simulation application for predicting the trajectory of pandemics. I managed to model a complex phenomena such as a human social network using 2D particle dynamics with collision, attraction, and repulsion behavior to simulate social distancing and large gatherings. I wrote a CUDA C++ program to implement this model and made predictions about the course of the pandemic in Québec to provide informed public health policies about the best measures to control the spread of the COVID-19 pandemic.

Although I am happy with my current job working as a researcher at McGill and coming up with my own research ideas, guiding and supervising students to make their ideas a reality, I wanted to explore something different that I could only find at Apple. That is the opportunity to work with a multidisciplinary team and bring people's ideas together. My lab, where I did my doctoral studies specializes in multidisciplinary design optimization for coordinating the engineering activities of multidisciplinary teams and organizations.

I believe that my strong mathematical and simulation skills, experience in software development, and understanding of the industry's simulation needs will add a lot of value to the product development efforts of Apple and help us both realize our vision of a better tomorrow for everyone around the world. I hope you enjoy going through my profile and my projects on my website (https://khbalhandawi.github.io/projects/) and I hope we can discuss all of this. Needless to say, I am a huge fan of the technologies and products by Apple. My parents gifted me my first MacBook pro as a child in Syria and its has been by my side ever since. In a way, it was the reason why I went on to do a PhD in STEM.

Yours sincerely,

Khalil Al Handawi