January 14, 2018

The Robotics Institute
Carnegie Mellon University
5000 Forbes Ave,
Pittsburgh, PA, 15213

Dear Recruiter,

I am a final year Ph.D. student the Robotics Institute, Carnegie Mellon University, working under the mentorship of Professor Srinivasa Narasimhan and Professor Yaser Sheikh. I am writing to apply for the research position at the Apple. Having received intensive training on 3D computer vision for many years, I am very interested the opportunity of bringing my research and engineering skills to Snap's products.

My research seeks for novel algorithms to reconstruct and visualize social dynamic events from multiple videos in the wild. In a nutshell, I am advocating for the concept of the *virtual* time machine. Imagine if we could go back in time all along the memory lane to revisit the fine moments of our life such as our first birthday, our wedding ceremony, or the moment our first kid was born, etc., like everything is happening around us. While building a *real* time machine may require some more lifetimes, the advent of affordable and high quality smartphone cameras has presented a great opportunity to build a *virtual* time machine in a near future. Any significant event is now captured from multiple perspectives. These collections of social video data provide a unique opportunity for rich explorations of the scenes, far exceeding what is possible with a single camera. As an example application, since the video are captured from different perspectives and at slightly different times, combining their information in 3D space effectively re-creates the scene at higher spatial and temporal resolution than what can be obtained from individual videos. By exploiting such rich visual data, we could playback the moment when your wife entered your wedding ceremony, when you poured the champagne into the stack of champagne glasses, or when your wife threw the bouquet to the crowd at slow motion and from all possible angles. Such precious moments, lying deep in your memory, magically come back to us immersively and realistically. Please refer to my website for some preliminary efforts in solving this challenging problem.

To sum up, I have a tracked records in developing 3D vision algorithms for novel visual event browsing. These algorithms are geared toward unconstrained and unprofessional settings. My past experience offers me an edge in developing novel computer vision and computational photography algorithms for Snap product. Thus, I would appreciate the opportunity to discuss my qualifications and the position in details.

If you have any questions, please contact me at (202) 549-1458 or mpvo@cs.cmu.edu.

Thank you for your consideration.

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