Research Statement

Yashasvi Baweja | 2nd Year PhD Student, ECE, JHU
ybaweja1@jhu.edu

I am a second year PhD student in Electrical and Computer Engineering Department, at JHU. My current research revolves around using computer vision models to perform face anti-spoofing, and am advised by Prof. Vishal M. Patel in the ECE department. My long term goal is to **build large scale data-intensive analytics/vision systems** which are **robust for wide-audience deployment**.

My research motto is to ***explore*** how to best ***implement*** and ***deploy*** high performance computing systems in real world applications and reciprocate my learnings to others. In an age where Peta/Terra-byte is the new norm of data scale in large scientific discoveries [1, 2, 3, 4, 5], I believe we as an engineering community could benefit together by improving how to **manage and analyse big data**.

As systems based research has already made significant leaps (like MapReduce, Nexus, MCDNN, etc.) and is keeping at pace with (conferences like MLsys, USENIX OSDI, etc. for) exponential rise in data, this is one domain that I would like to **learn**. To achieve my eventual goal of building large-scale vision/analysis system, it is important to **understand** first how these existing robust systems are made and then apply my skills as a ML researcher to better use. Not only will this help me build better systems in future, but also appreciate the effort required in **making such systems a reality**.

Nonetheless, the idea of collaborating on such big code bases in a conducive environment, understanding the systems side of high performance clusters and realizing its correlations with direct societal implications, really **excites me**. I am thus looking forward to learn the skills required to be a part of such large-scale projects. Building expertise in the form of both as a **systems and ML** researcher would make me a good fit for future career prospects.

Along with my motivation to work in such environments, the current skill set in the form of: proficiency in writing code(github), prior research experience(s)(research), technical writing capability(papers) and good academic record(highlights), gives me a head start to pursue research in ML based systems.

To bridge the literature gap, here is my plan of actions: December 2020 (learn systems basics, course(s): parallel, ocw:parallel), Spring 2021(Reliable Software Systems course by Prof. Huang(JHU)), find research advisor (ASAP). Furthermore, with Fall 2021 semester, I plan to join a different lab which aligns with my research interests.

I understand that having some experience in systems, would have enabled me to be better suited for the job, but I believe my proficiency in vision based concepts, my programming skills, ability to bring the best in everyone on a team (technically and holistically), along with my zeal to learn, will help bring something constructive to the assigned project.