Research Statement

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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. I am interested to work in the field of **building ML/Vision based systems** which are **scalable and robust for wide-scale deployment**.

My research motto is to explore how to best ***implement*** and ***deploy*** vision/ml based systems in real world applications and reciprocate my learnings to others. As having seen first-hand experience of computer vision community pushing its limits to just emulate humanlike vision (and almost saturated), I believe the next revolution in the field will come from how best we can build more scalable and robust systems for wider audience. At the end of day, we wish the algorithms (we build as AI researchers) to be made into actual systems which help the general public. Nothing would make me as a researcher more happy than to see something **I build being deployed in real world**, and being used by the public or organisations for their benefit. Not only does this give me a satisfaction, but also gives me a sense of my role, as a person contributing positively towards society.

Now to build these systems I understand is not an easy task and requires considerable effort and prerequisite skills. As far as the skills are concerned, here are some of my technical highlights which I think would be valuable towards achieving the above mentioned goal:

6+ years of programming experience, with proficiency in Python, Pytorch, Matlab and C(very basic). **4+ years** of working in the field of **deep learning** with a focus on computer vision. Proficient in writing code in **Pytorch** for both research and project purposes. Multiple **research experiences** spanning over a period of 4 years, with last two years in my undergrad, and next two years as a **PhD student at JHU**. Graduate/Senior level courses pertaining to machine learning concepts, MLSP(A+), Vision as Bayesian Inference(A), AI(A), Advanced ML (A). In past internship experiences(2), took lead in building **deployable ML projects**, Landslide prediction system(arduino) and Face/Hand gesture recognition based Automated Golf Cart.

Apart from the above skills, my recent **publications** demonstrate the technical writing capabilities required for positively contributing towards research papers. For detailed description they can be perused here

Although my area of expertise doesn't align directly with the aforementioned goal, I am thus looking for something which comes at an intersection of machine learning/vision and systems engineering. As much as I like to perform research and write publications, I believe the heart of all lies in the **source code where all the magic happens**. Furthermore, I am a strong proponent of **reproducible research and open source argument**. 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/ml based concepts along with my coding skills will help bring something constructive to the project. Needless to say I am ready to learn the systems related concepts required to better contribute to the project.

Quotes:
"Increasing coherence between the technology base used for modeling and simulation and that used for data analytic computing"