The field of 3D Vision and Artificial Intelligence, which I'm recently working on, is advancing quickly these years. I wish to focus on three of my passions during my visiting: 3D Vision, Geometry and reasonable utilization of AI. My current interest lies in the combination of Geometry in Graphics and AI/3D Vision. I strongly believe different representations in geometry have their own benefits for the different problems we are solving.

I'm currently in my first year of the M.Phi program in computer science at ShanghaiTech University under the supervision of Prof. Shenghua Gao. I previously completed my Bachelor's in computer science at Shanghai University, where I obtained a top-rank scholarship.

My first research program was about the automatic reconstruction of neuron cells in brain science during my junior year. Dr. Yimin Wang motivated me to solve the problem with computational geometry, which I used to learn when I was actively participating ACM programming competition.

After I finished that project, I became curious about Graphics, and I learned the fundamentals by self-study. In my senior year, I decided to start a personal project on Geometry because of my interest. I implement CPU version Poisson Surface Reconstruction from stretch first. At that time, I was not satisfied with the current version because it took several minutes to process Stanford Bunny. So I further learned CUDA programming and finally succeeded in implementing a GPU version, which is 40 times faster than my precious CPU version. From this project, I understand what cool things can be done with the knowledge of Geometry.

At that time, I was curious about what modern AI could do to 3D problems. Due to this reason, I decided to join Prof. Shenghua Gao's group one year ago, and I finished my Bachelor's thesis about indoor scene reconstruction from multi-view images. Currently, the extension of my bachelor thesis is under the revision review of TPAMI as one of the co-first authors.

In this recent project for TPAMI submission, where I collaborated with Yuting Xiao, I introduced importance sampling, which I learned from physical-based rendering, combined with uncertainty learning. I also make full use of curvature on implicit surfaces with the help of differential geometry. (Thanks to Prof. Keenan Crane's online course.) I finally achieved a surprising effect in this paper with my collaborator.

After that, I started to do a project on my own. I made an anonymous submission to CVPR 2024, tackling some problems with the autonomous driving dataset.

Since I started my research experience, I have always benefited from geometry. I have also tried to learn some geometric vision after I started my master's program. Although I also get much knowledge from geometric vision, I still find myself interested in Geometry from a Graphics view.

I wish to pursue any possible application of the combination of AI and Geometry during my visiting. Whether it's a reconstruction problem, a generative problem, a pure geometry problem, or a robotics problem, I always believe there is a proper representation(SDF, Occupancy, Voxel, Whatever) for each specific problem. The property of that representation and what we can do further with that representation in that setting is what I want to explore.

I'm currently not so concerned about the funding of my visit; please don't hesitate to contact me if you think there is any chance(remote/in-person) that suits me.