

# Research Experience

## Relevant projects

**Image processing and analysis:** Most recent work (MS thesis) is about experimenting a 3D image resizing algorithm. Visualizing and manipulating images like MRI medical images, CT objects, and scientific simulation data are a major part. Another recent project is on using topological analysis tools to assist resizing and *understanding* 2D images.

As an undergraduate, I did a team project on detecting abnormal behaviors in videos, and my Bachelor's thesis on image retrieval.

**Statistical and data analysis:** I participated in many mathematical modeling (team) projects during college, when I learned skills in processing/analyzing data. For instance, we used time series and developed analytical models to predict water consumption based on records of existing years; I learned various classification approaches, from neat ones like nearest neighbors search, to machine learning models such as multi-layer neural networks.

## Research interests and goals

Always considering myself with science, I switched from engineering to studying computation and algorithms. Image analysis has been a window to let me see the science fields, by connecting techniques learned to scientific facts and questions. I touched the field of visualization during graduate school, from which I'm the most interested in how to utilize all the knowledge we have learned about color, human visual system, to do a better job in *visual encoding* so that it ideally either (1) enhances the learning efficiency of the viewer, or (2) assists domain experts in scientific discovery.

Learning on psychology had become a new fortune to me since about a year ago, when I was experiencing adversity in study and extreme mental struggles. I learned gradually from materials on effective thinking, behaviors, and brain studies, and as a result I became even more self-aware, and realized the power that lies in the science of psychology.

**How could my experience/skillset relate to the lab** Firstly, I think my training in data/statistical analysis would match the basic qualification of this position. I'm good at data processing tools like MATLAB, and have programming skills to customize algorithms when necessary. Meanwhile, analyzing and visualizing 2D/3D images is what I'm skilled at. More importantly, I am confident in adapting to new environments, and I've behaved well both as a teammate and as an organizer. My communication skills, rigorousness, and willingness to take on challenges would be beneficial to fulfilling the job.