As I grew up, I found as the technology became more advanced, people mostly became more depressed and anxious. I have always wanted to improve people’s mental health since I was little. At the age of 14, I fell in love with visual arts. I greedily consumed the great works of cinema, TV series, storytelling video games and VR shorts. I also made a lot of video works in the past 5 years. I believed visual art was the best way to reach to our insides, bring us together and give us motivations. Then, I entered Pomona College as a film studies major. I am grateful for the freedom I had in here in exploring my interest. In the film history class, I realized the importance of technology on the development of visual art. As I saw the special effects in movies like *The Curious Case of Benjamin Button* and *The Avengers*, I was attracted by how graphics technology could be waived into storytelling. I realized that technology and art were related rather than separated. Thus, I wished to explore new ways to enrich storytelling and interactions with graphic technologies.

My journey in research began with the goal to create better graphics. I first looked into computer graphics, but there was not much research opportunity in my college, so I switched my studies to computer vision. It was not a deviant shift, since there are a lot of applications of machine learning in graphics tasks. I self-taught the contents with Jeff Heaton’s Keras lectures, Stanford CS231 Convolutional Neural Networks and CS330 Meta Learning.

I started my first research project on facial recognition with professor Weiqing Gu at Harvey Mudd College. I proposed to use a joint network combining the prediction of face shape recognition and CNN recognition on extracted areas. I registered the project in a college-wise machine learning club and recruited three students through the organization. I led the research direction, held group discussions and distributed research works. Together, we implemented the distance recognition with Gaussian model clustering. Although it did not reach to an ideal result, I learned to read the papers, set the research goal, do presentations and write academically. Most of all, I found I enjoyed discussing an idea with a group of researchers. I was thus determined to go on doing research after this experience.

Then, I started my next project which combined vision and graphics. Earlier this year, in Vincent Sitzmann’s twitter, I read about the exciting work of NeRF. The model could achieve high-quality rendering, but the training took too long so I thought of accelerating it with meta-learning. After I implemented MAML-NeRF, it performed only slightly better than a blank model, and became worse as the iteration increased. Rather than giving up, I went on by trying Reptile. Unfortunately, I was scooped by the original team. They used the same method but they had a much larger data pool. Though I was not able to publish, I experienced the whole process of research in this project. My writing skill improved to a higher level with help from my teammate Alex Beatson, a Princeton PhD student, and my math thesis advisor prof Radunskaya. I also learned to alleviate my frustration and refresh my energy, as well as the importance of assessing the plausibility of the plan before working on it.

Towards the end of this research, however, I started to contemplate about my area of study. I found that as I delved into the data and models, though exciting and challenging, I deviated from my initial motivation in helping people. Rather than making a model that could run faster, I was more interested in how people could benefit from it. Therefore, I decided to start a research project in human computer interaction, a field I had no prior experience.

This decision brought me to professor Misha Sra at UCSB in July. The collaboration was the turning point of my research interest. Prof Sra gave me a lot of independence and trust. She encouraged me to start a new project rather than joining an existing one. To decide upon the topic, we debated over each of my proposals and negated most of them, until we finally settled on the current one – AR assisted language learning. In short, we let our participants walk around an outdoor area holding a smartphone, through which they would see word tags in the foreign language attached to real objects so as to learn those words. I discussed a lot of details with prof Sra on how to display the words in the most comfortable way and how to control the time spent on the walking procedure. In such way, we refuted the initial plan to generate the words with machine learning models and instead made an interface to let other people create the tags. Designing the first user study in my life was quite challenging, so I went through every detail in relevant studies and learned the HCI principles behind them. In this way, I finished experiment setup and testing metrics. Eventually, I successfully designed a pipeline that could demonstrate the effectiveness of AR learning in fair comparison, and implemented an Android AR app with cloud anchors to give participants a comfortable user interface. At this point, we have all the details set and we hope to conduct the user study in April inside the UCSB campus.

Besides how to design the app and questions for an HCI research, professor Sra taught me that the value of technology was largely dependent on how we used it. She also broadened my sight on the field of HCI. As we talked about sports training simulation, VR drawing, storytelling and graphical memorization, I was surprised by how much more we could do with the technologies to change people’s lives. The best part in this research was knowing that my idea could actually help people learn the language by making it easier and more interesting. I realized that HCI was the field I truly wished to work in.

I still cherish my experience in computer vision and neural rendering, because only through them did I learn the capabilities of these subjects. It made me realize the contradiction that the technologies have developed so much in recent years, but the cinematic and game language has changed so little. In the VR movies I saw at SIGGRAPH 2019 and Beijing Film Festival 2020, I was disappointed to find that the storytelling was the same as traditional movies, even though I could view from all the angles. I believe this difference was due to a lack of focus in this field. Therefore, rather than improving the capacity of technologies, I want to explore its potentials.

I sincerely wish to join professor Misha Sra’s group. She has a wide variety of projects in applying vision and graphics technologies to create better user experience. My favorite of her works are Walking and Teleportation in Wide-area Virtual Reality *Experiences*, *Time Travel MIT* and *VMotion*. I’m mostly interested in working with her and AR Rahman on the design of novel storytelling techniques. Other possible topics are technology-facilitated depression detection and recovery, cinematic experience in AR/VR and friendly 3D modelling interface. In all, I will definitely accept the offer once accepted to the Perc Lab. Furthermore, I’d also like to join professor Tobias Höllerer in Four Eyes Lab. I can continue the lab’s work on *AR annotation and 3D reconstruction in VR*. I also like to continue the work, *Illumination for 360 Degree Cameras,* on lightfield capturing, or wide-angle capturing*.*

Lastly, UCSB has a strong cs department in interactive visual technologies in general. There are great professors with an excellency in different fields, such as prof Lingqi Yan in graphics, prof Pradeep Sen in neural rendering, and prof Jennifer Jacobs in computer-aided design. I can learn a lot in these fields while doing HCI research. In all, I believe that I will thrive in UCSB.