My undergraduate training has covered topics in geography, remote sensing and computer science technology, focusing on computer engineering with geographic information applications. When I started enrolling in professional courses, I discovered that my true passion was for CS rather than geography. Through programming in C, and implementing some complex applications by teaching myself Python, I became fascinated with discovering how applications are built and how powerful coding can be. I see programming as the language of the future when I look at the changes Tensorflow and other AI technologies have brought about in recent years. Using coding to achieve more automatic and convenient processes or to identify underlying data patterns is what I want to do in my career.

In my undergraduate programming assignments, I gained practice using C++, C# and basic Java and JavaScript. For GIS and WebGIS, C# and JavaScript are the main tools used at the undergraduate level, to program a geographic information system capable of drawing shapes and manipulating an input map and to create online electronic maps with basic functions. In a course on spatial data processing, I also learned how to use R to conduct a simple geographic data analysis.

In my junior year, I participated in a research project developing a geodata standard. I was responsible for collecting and organizing the geographic data formats from various social media sites, crawling the web for sample data and assessing their reliability. We used the collected data structures to decide which design features should be taken into consideration when the various possible geodata formats were discussed in the process of developing our standard. Through this research experience, I learned how data is organized and connected in the Internet, and became more familiar with the common data formats, such as json, xml and csv, as well as and basic data processing methods in Python. To gain more focused training in Python, I enrolled in a course through Udacity in which I learned how to build a simple search engine. To support my data processing work for this project, I also enrolled in several other online courses on data science and practiced by developing an IPython solution for a Kaggle case, using multiple regression to predict housing prices.

For my summer internship as a data analyst in Shenzhen Kuangchi Space Technology Co., Ltd., my primary responsibility was to clean data and study a finished project, which I was free to choose for myself based on my own interests. I chose a right whale identification project, which uses a convolutional neural network (CNN) to identify whales from photographs. In this learning process, I began by coding the basic neural network using deep learning, following the online tutorial to write Python codes, and following Stanford's CNN for Visual Recognition courses to develop image processing skills systematically. I also consulted the project's

analytical blogs. Using this knowledge, I simulated the codes to understand the design and optimization methods needed for this specific application.

During this internship, I also wanted to experiment with image processing on my own. For this project, I decided to try using Keras on AWS. The data I used came from an online building photo library. By using the build-in CNN in Keras, the final layer of CNN--a feature map--can be obtained, which can be calculated on the basis of similarity with the input picture. Then, by comparing the similarity of each picture, the most similar photo can be identified. Although the results were not perfect, due to weaknesses in the data sample used to train the program for optimization and preprocessing, this small experiment helped me to gain an understanding of image processing using the CNN application.

Currently, out of my interest in teaching myself advanced CS skills, I'm participating in a group led by a master's student in Computer Vision & Remote Sensing (CVRS) Lab, working on optimization of object detection. Having picked up a basic understanding of RCNN and Fast-RCNN, I'm reading papers and codes on this subject. Building on what I've learned so far, I'm working on optimizing the model using the Tensorflow platform, experimenting with changes to the number of bounding boxes and their rotation angle.

My career goal is to become a computer engineer, and I feel a graduate degree is necessary to succeed in this field, with advanced instruction in practical CS courses. My grasp of certain core CS disciplines remains somewhat superficial, as this was not my undergraduate major. In addition. Another reason I need further training is that my internship and research experience exposed me to CS exercises, but did not involve completing formal computer application projects. By applying to this program, I hope to catch up in computer science fundamentals and gain exposure to more in-depth disciplinary training. The courses offered in this program cover the skills I need to work on next, such as algorithms, and here I would have access to internships at leading technology companies where I could gain valuable hands-on training. For these reasons, I see your master's program as the logical next step towards my career goals.