Personal Statement

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Introduction

I'm Yanjie Ze, a sophomore majoring Computer Science and Engineering at Shanghai Jiao Tong University.Currently my research interest lies in 3D Computer Vision and Reinforcement Learning, and I am always willing to learn more. I'm a man with some ambition and great enthusiasm, to explore what I'm actually interested in.

In high school I participated in the physics competition and the chemistry competition and had looked forward doing research before that. Although I did not select mathematics or physics after the college entrance examination, Computer Science brings me a lot of fun.

During my first year in SJTU, I looked around and sought for the interesting research field. Now I'm a sophomore and I still holds enthusiasm for research and hopes to dive into deeper.

My first year GPA is 3.9/4.3, ranking 12/118. It's good for the competition is fierce, but not the top for I have spent amount of time exploring other fields. I also got some awards and scholarship, such as Union Water Scholarship(12000¥).

Research Experience

PRP:Research on Character Recognition Based On Machine Vision, Feb 2020 - Aug 2020

PRP is short for Participation in Research Program, which is a program aimed for the undergraduate interested in research. This program is usually for the sophomore or junior students, but I participated one PRP in my freshman year for my curiosity and interest.

The PRP "Research on Character Recognition Based On Machine Vision" is to solve the problem of recognition of the characters in factories. Guided by ProfessorYansong Zhang , I got very basic knowledge of Machine Learning and Computer Vision. Then we create a dataset based on the components from the workshop and the steamship ,which is divided into three big classes and many subclasses, and I trained a trivial CNN for the classification, which could have accuracy over 95%.

The project is trivial, but it invokes my desire to explore more in this field. Since I was a freshman at that time and knew nothing, it was a valuable experience for me. I also got to learn to study by myself gradually.

Join Machine Vision and Intelligence Group, Oct 2020

In Oct 2020, I joined a group led by Professor Cewu Lu, called Machine Vision and Intelligence Group. Guided by Dr.Yang You, I am focusing on 3D computer vision. I have tried to implement an algorithm called PointPillars. Recently, our research mainly focuses on 3D instance segmentation and we are trying to figure out how to find a more effective way to detect small 3D objects.

Computer Vision is a challenging field and covers many topics. Although the bar of the field is low, the upper bound is high. Many works done by outstanding researchers have been widely used in our life, and the final purpose of Computer Vision is also attractive: to make the computer vision same as the human vision, or better than.

Study on the Theory and Algorithms of Reinforcement Learning

Reinforcement Learning is another field which I am interested in and learning. Different from Computer Vision, RL is more theoretical and focuses on the decision process. What I want to know more in it for is because the pure curiosity and research interest, and I think if an agent masters the skill of making decision(RL) and sensing the world(CV), it will work as simple intelligence.

Guided by Professor Shuai Li, I start to study Online Learning and Reinforcement Learning. We have a weekly reading group to discuss problems and knowledge, consisting of several excellent students from SJTU. I will do a presentation on Mar 28, 2021 in the reading group. The presentation is mainly about Upper Confident Bound Value Iteration(UCBVI) and the proof of its regret upper bound, and the presentation material is uploaded to my website.

Here I just clarify three important research experiences for me, and more other research experiences and projects are displayed in my resume.

Expectation

As my mentor Yang You used to tell me, "Since we have decided to do research, we should not be too focusing on the paper but on the research itself." I agree on him.

When I am trying to do some research or really doing some research, I feel concentrated and happy. I must admit that what I have touched and learned is still shallow, and it's my ambition and interest that drives me to learn more and explore more, finding problems and solving problems. In Reinforcement Learning, exploration is essential, so it is to me.