

Personal Statement

Dear Admissions Committee:

My name is YanLei and I'm majoring in Information and Computation Science at XiangTan University. I have been working hard for the past three years and will be qualified to exempt from postgraduate admission exam. I eager to study at ShanghaiTech University.

RESEARCH BACKGROUND

I am capable of doing some not-very-serious research because I gained useful experience from a College Student Innovation Project and the National Mathematical Modeling Contest.

In the Innovation Project---Finite Element Method for Electromagnetic Waves in Complex Medium, I and my team have done some numerical simulation work under the instruction of Dr YangWei. In the beginning, we found the project was so hard that we can't even understood the related literature due to a lack of deep mathematics foundation that beyond undergraduate level. So after discussed with our instructor, we decided to turn to the less-demanding work --- numerical simulation. In the end, I learned a lot although we haven't done much innovation.

ORIGIN OF INTEREST

When I was preparing the National Mathematical Modeling Contest during last summer vacation, I first got to know machine learning. To get a soft start, I chose to read a simple Online Book named *Neural Networks and Deep Learning*. While learning some basic concepts and algorithms, I accomplished my first machine learning project---MNIST. What I still remember is the excitement and pleasure I got after the program ran successfully and had a very low error rate on the test set. It was different from the feeling I got from mathematics courses. From then, I think this is an area that I really want to spend time studying, but since the core courses of my major are math, I think my program skills need to be strengthened. So I took several courses of Machine Learning and Deep Learning on Coursera to practice classical algorithms such as regression, clustering, SVM and simple neural network. In the process of studying these courses, I found little mathematics deduction, so to satisfy the instinct of math students I learned the statistical meaning and rigorous math of the algorithms from CS229 of Stanford. After that, I have decided machine learning is the area that I will study in the postgraduate time.

WHY MACHINE LEARNING?

There are many challenges in Machine Learning. First, how to improve unsupervised learning to make it effective and understandable? Because manually labeled data is scarce and costly and to obtain numerous labeled data is very hard. Second, how to accelerate reinforcement learning? Third, how to shrink a big model into a small model so it can run on mobile devices? And how to learn from a small amount of data? These questions make me excited. On one hand, these problems have

great application value. On the other hand, just because there are so many problems, I can probably make a little bit contribution in this area. Apart from objective reasons, there are subjective reasons that make me want to study Machine Learning. Like many people who love science, I also like Sci-Fi, like imagining what the future society will be. I don't believe Artificial Intelligence Threat Theory. Even if we can create such intelligence, I think we cannot properly get along with it using current human moral system. What I want to research is the kind of intelligence that can help humans perform high-level intellectual activities and free many people from low-level, repetitive activities.

AREA WANT TO STUDY:

Currently include Computer vision, Reinforcement learning, Semi-supervised learning.

FUTURE PLAN

If I have the opportunity to study at ShanghaiTech, I will work hard in the following aspects.

First, knowing that no skyscrapers can be built without solid foundations, I will master the required courses, consolidate my professional foundation and improve English ability. A habit of reading literature is also what I want to cultivate considering that I can have more topics to discuss with supervisor and classmates.

Second, I hope I can get a strict academic training in the three years and strengthen my research ability. To improve my research and innovation capabilities I will not only actively participate in scientific research projects but also strive to publish high-quality papers in core journals or top conferences. At the second year, I will decide whether to get a PhD degree.

Third, I will make an effort to write an excellent graduation thesis and continue to work in Machine Learning area.

Thank you for reading my personal statement. I hope you can consider my application. Wish all the best for your work and life.

Sincerely,
YanLei