Hello admission committee,

My name is Guo Jinpei, a computer science undergraduate from Shanghai Jiao Tong University. During my journey as an undergraduate, I showed great passion for computer science, artificial intelligence, particularly machine learning. I achieved A or A+ in all the advanced math courses, core computer science courses, machine learning and artificial intelligence courses. I was awarded the national scholarship twice, and Shanghai scholarship once, which served as a proof for my distinguished academic performance.

I actively joined research groups and published four papers in the machine learning field. I worked closely with Professor Yan Junchi at SJTU-ReThinklab. We developed advanced transformers for graph matching problems, and proposed to inject guidance to diffusion models to generate solutions for TSP and MIS, two NP-hard problems. I also did research with Professor Si Xujie at University of Toronto. We developed a SATNet\* to learn the representation of logical problems such as Sudoku as conjunctive normal form, and employed robust commercial solver to generate assignments. We also learned how graph neural networks solve the boolean satisfiability problem, and proposed that GNNs mimic the solving strategy of local research heuristic. We also built a comprehensive SAT dataset, which consists of seven different generation strategies to generate SAT instances, to evaluate performance of different machine learning models.

Now I dream of designing ML agents that surpass human experts, well-designed algorithms and solvers in terms of both accuracy and efficiency in tasks involving reasoning. Therefore, I aspire to acquire advanced ML knowledge and pursue further exploration on ML such as [AI Question Answering](https://msaii.cs.cmu.edu/research-areas/information-extraction-summarization-and-question-answering). The LTI, with its top-notch faculty and impeccably crafted curriculum, is the perfect incubator for this dream. With the elaborately designed graduate courses, I can not only deepen my ML knowledge but also apply ML to real-world scenarios. I am particularly excited to work with the pioneering scientist Prof. Eric Nyberg on [Summarization and Question Answering](https://msaii.cs.cmu.edu/research-areas/information-extraction-summarization-and-question-answering). I am curious to witness how ML models exhibit the potential of summarization and reasoning to answer questions based on the acquired knowledge, drawing on my previous research experience in ML to help push the boundaries of this exciting field.

This is Guo jinpei, and I wish to see you soon at CMU.