Please tell us about aspects of your background and experience that are no’t captured by  
other parts of this application. We suggest answering the questions below. You can answer them in any order, and they do not need to be called out explicitly. Statements are typically one to two pages in length. Please limit text to 1000 words. Please view the applicationguidelines page on our website for more information on how to create a successful application.  
· Other than reputation, what most interests you about attending the graduate program  
you indicated as your first choice in your Electrical and Computer Engineering application?  
· What are your goals after you complete your degree, and how will our graduate program  
help you achieve your immediate and longer-term future career objectives?  
· Please explain why you selected your research areas/areas of interest and/or interested faculty in the application.  
· Describe how your work, research, educational or other life experiences have prepared you for graduate study in this program.  
· Choose one of the following topics and discuss:  
· A time when you faced a difficult academic challenge or hurdle and how you navigated  
through it.  
· An example of how you managed your time and academic workload in a previous or  
current degree program.  
· An example of a leadership or mentoring role that you held. What was the role and how  
did it impact you?

A new era of the implementation of Artificial Intelligence (AI) is approaching, as we find ourselves at the nexus of machine learning and engineering practice. In the face of the emerging breakthroughs in AI algorithms, the computing infrastructure and engineering challenges like machine learning systems prove to be significant impediments to the implementation of algorithms and the democratization of technology. As a promising researcher, I am committed to this tech revolution.

My academic journey began during my second year at Central South University, where I took an Artificial Intelligence course and was deeply captivated by the elegance and power of machine learning.

My professional engagement as a research assistant in Professor Lu’s team exposed me to machine learning algorithms and training. Nevertheless, a project focused on dataset preparation has revealed that scientific research often relies on tedious yet crucial engineering steps. To support my team's research on person and vessel re-identification, I used 3D models and Blender programming to generate a usable image dataset automatically. For the first time, I found that this kind of engineering work is precisely the prerequisite for the implementation of algorithms.

With this fresh understanding, I deliberately trained engineering programs. In my senior year, an excellent opportunity appeared, enabling me to transform my research into a usable system. In the RTDNet project, I not only designed a temporal difference (TD) module and recurrent network architecture, but also deployed it as an online service, allowing users to upload videos and obtain inference results via a webpage. To make the idea become reality, I needed to address the preprocessing of diverse input videos, design a stable interface, and manage the stability of GPU-intensive inference during deployment. Experiencing the entire process inspired me: AI algorithms can only truly unleash their value when they are engineered and embedded into a comprehensive process.

To deepen my understanding of engineering in AI, despite facing the most important graduation research and four curricula, I shifted my role from a student of the LI Team Project Module to a teaching assistant. Within limited time and heavy workloads, my scientific and technical thinking, particularly my engineering mindset, contributed significantly. By standardizing and automating repetitive questions raised by students, I developed a website to post the common problems and update it accordingly. Besides, a meeting reservation system is provided for students to schedule meeting times automatically. It not only achieved my purpose of automation, but also reduced inefficient email exchanges and ad hoc communication. In terms of the meeting slots, I arranged them for the after-lunch period, which fulfilled my TA duties and spared me a large chunk of time to focus on my final project without interruption. For the academic courses, I compiled summaries for each lesson based on the exam requirements.

The multiple approaches of managing workloads with standardized, batch, and traceable records supported being competent for my schedule, also allowed me to develop skills in engineering collaboration in this TA position. The rapid advancement of AI has become a double-edged sword, as I've noticed that team members often unconstrainedly use AI to generate code. From a professional angle, instead of improving efficiency when utilizing AI, it resulted in style conflicts, code redundancy, increased communication costs, and ultimately reduced overall output. To tackle this issue, I implemented constraints, requiring each team to develop a unified style guideline and establishing a clear definition of task completion. Meanwhile, I reiterated the boundaries of AI's use among the 42 students clearly, making it serve as a "translator," translating natural language requirements into code snippets, rather than a “worker” that directly generated complete projects. This approach has proven to facilitate smoother student collaboration and minimize rework. The outcome also demonstrated that the essence of integrating team norms with a systems engineering framework is in making AI tools truly improve system development efficiency.

Experiencing "AI in the loop" provoked me to delve deep into the interplay between AI and systems engineering. The emphasis on the core issue of machine learning systems: how to effectively embed AI into software and computing processes while ensuring system reliability and maintainability. The contemporary challenge is no longer to improve model accuracy by another 1%, but to integrate engineering system capabilities (distributed training, model service-oriented, inference optimization, and resource scheduling) into the entire lifecycle of data processing, feature engineering, model iteration, deployment and monitoring, while constraining the system boundaries and ensuring scalability.

My desire for engineering approaches in AI stimulated me to pursue the MS in Electrical and Computer Engineering offered by Carnegie Mellon University. The program aligns with my academic goal of conducting engineering-oriented training rather than simply pursuing algorithmic indicators. Diving deep into AI/ML Systems concentration consists with my objective of conducting algorithm research and engineering implementation.

Courses such as Algorithms for Large-Scale Distributed Machine Learning and Optimization 18-763，18-667,18-847F will facilitate me in understanding the engineering process from model training to deployment. Aside from harnessing my advanced knowledge, the internship, tech talks, and hackathons will give me access to practice. The trail in real-world scenarios will help me transform the methods into reusable practices.

The theoretical and practical enhancement at CMU will cultivate me into an ML Systems engineer. In the short term, I plan to accumulate hands-on experience for my next step in entrepreneurship. Upon graduation, I aspire to work at XX to tackle the scalability, cost, and reliability issues of training/inference. With three to five years’ preparation, I will move to the next stage, pursuing my long-term goal of developing a general-purpose inference platform, aiming at multimodal and real-time applications (such as video, robotics, and AR). Collaborated with like-minded peers, I can promote data-model-system co-design and output reusable components and standards in open source and the community continuously.