Statement of Purpose

TU Lin | **Program**: Master of Software Engineering - Scalable Systems | **Contact**: trusaidlin@gmail.com **Revisions: 3 @2212121225 (CMU MSE-SS)**

After my first experience using Windows XP in elementary school, I was captivated by its practical window function. This sparked my interest in programming and computer science, and I began to self-study by purchasing books on the subject. In junior high, I developed software to calculate rankings and was praised by my classmates. This boosted my confidence in using programs to help others solve problems. However, before graduating from university, I realized that my knowledge was not sufficient to build a practical and reliable system like Google's search engine while there are many development details and technical complexities involved in creating such a system. That’s why I am eager to continue learning about software engineering through CMU's MSE Scalable Systems program in an effort to fulfill my dream of developing a **large-scale** and **widely-used** system.

In order to join in the development of large-scale projects used by many people, I participated in the TAT App project in my freshman year as a lead developer. TAT is a campus life tool developed using the Flutter framework and used by thousands of students at the National Taipei University of Technology. During this period, our 4-member team has fixed many existing problems. For example, we established a Kanban Board for the project and defined the requirements and use cases for each Release milestone. In the code part, we put most of the existing business logic split into different submodules, combined with Clean Architecture and Null Safety concepts to refactor and maintain a unit test coverage rate of more than 90%. The most difficult challenge I faced was that I was short of the concept to design the operation process when I wanted to fix the problem of account login failure without warning. Therefore, I tried to clarify the login process by drawing a step-by-step flow chart. Surprisingly, I was able to solve those problems. The experiences of overcoming difficulties have inspired me to create user-friendly products with software engineering methods.

I interned at LINE Taiwan to gain experience in developing the most widely used chat software in Taiwan and exploring its engineering mysteries. Through agile development on the LINE SHOPPING App project, I improved my team collaboration skills and learned the importance of asking "useful questions" in problem-solving. I also developed strong communication skills and eventually led a team in the backend department to develop a new microservice architecture system. In this role, I guided team members in using clean architecture and carefully considered the impact of changes on system performance and security. I also learned how to deploy containers to Kubernetes and monitor and schedule them. These experiences have further fueled my interest in learning more about developing large-scale systems. To effectively train me to organize complex ideas, I shared my experiences at the LINE TECHPULSE 2022 conference, including my desire to enhance my implementation skills and my work experience. This allowed me to experience the feeling of a world-class product release, like Apple's CEO at the WWDC conference, and improve my ability to express myself more clearly.

At the university, I enjoyed gaining technical experience through hands-on experience. My partner and I recreated the game “BaBa is you” in TypeScript for the course “Object Oriented Design Practice”. We used the observer pattern to subscribe and notify the movement events of each character on the screen and used the builder pattern and factory pattern to generate each animated sprite with the PixiJS framework. After combining a self-made map controller with collision detection methods, a Puzzle game with dynamic game rules was reproduced. Meanwhile, I made a Web3 DApp with my partner in the course of "Smart Contract" with the purpose to help dog-loving charities collect funds and ensure that the flow of funds was open and transparent. We created smart contracts based on the ERC20 fungible token standard and Solidity language, and designed a web front end with Ether.js & React. In the end, we made an online fundraising system that could donate Ether according to the dog's name and photo. These practical experiences enable me to grasp the details and usage of technologies more effectively. Also, I can cultivate better technical sensitivity and familiarity as well as enhance my ability to develop complete software.

Moreover, I also served as an intern speaker at the annual developer conference (LINE TECHPULSE 2022) on behalf of LINE last year, taking this opportunity to share skills I learned in the company and the reason why I became an intern at LINE in my junior year. In addition, I broaden my horizons in the field of software engineering by actively participating in various student societies. When I was a freshman, I joined the Programming Club and served as a teaching assistant for Python, Java, Back-end, and Flutter courses. At the same time, I also joined the Students’ Information Technology Conference as a seminar and summer camp volunteer in 2019. These classroom projects, activities, and internship experiences have strengthened my determination to pursue advanced knowledge in the field of software engineering and computer science.

Through the postgraduate program, I can continue to improve my capacities and skills to solve problems in the software development process. The MEng in Software Engineering at XXX attracts me with its international reputation and excellent teaching faculty. I am especially interested in modules such as Software Measurement & Testing, Security Engineering, and Agent & Multi-Agents Systems. This program is not only a technical course but also allows me to hone my problem-solving skills. Most importantly, it can provide me with the best opportunity to enter and contribute to the field of software engineering. My career ambition is to work at a leading corporation, such as Google or Meta, to make the world a better place. It has always been my dream to build efficient, safe, beautiful, easy-to-maintain, and easy-to-extend software through professional software engineering methods. I sincerely hope you will give my application favorable consideration so that my goal can be realized.