My statement of purpose for National Taiwan University.
Nutchanon Jariyanurut, 4 Nov. 2022.

I am writing this statement of purpose for admission to the Program in Integrated Circuit Design and Automation at the Graduate School of Advanced Technology, National Taiwan University.

My interest in circuit design is a long journey. It began when I was in Mahidol Wittayanusorn School, the high school where I was conducting a project measuring the speed of a stress wave in wood. The challenge of this project was an instrumental design that must have enough speed and sensibility for sensing and processing data. This needed designing analog circuits for signals before being processed in a microcontroller. The project inspired me tremendously to pursue further in studying electronics as an undergraduate.

Then, I continued my study at Chulalongkorn University in the Department of Electrical Engineering. In my junior and senior years, I practiced in many areas of electronics. In 2021, I was on an electrical team in the engineering robotic club, designing a motor controller for the base of a robot participating in the RoboCup 2022 @Home open platform league, where I learned a lot about embedded systems and low-level debugging. Then, I participated in Digital Design Thailand 2021 Camp, where I learned about digital design and made mini projects on an FPGA board, such as designing an interface to receive a bitmap file on a computer and display it on an HDMI monitor. Wanting to learn more about Analog design, I took an internship at Silicon Craft Technology PLC as an analog design trainee. The projects I worked on for the company are designing a 2-state op-amp, using LTSpice and Python code to automate verification in specifications, and literature reviewing wireless power transfer utilizing an NFC frequency band. My ongoing senior project is a continuation of the internship work, that is, to design a peripheral for an existing NFC chip to use as a wireless power transfer device, where analog design and control system design techniques are implemented together.

During my internship as an analog design trainee, I discovered that the verification techniques in design are equally important as the design process itself. The specifications of the designed analog circuit my internship trainer gave me required over 100 experiments to be verified, so it required automation. I also found the importance of verification when I was in a digital design camp, that my designing process was slow when I had not yet emphasized in testbenches. These inspired me that I want to study further in electrical design automation.

I find your faculty very interesting and attractive because of this specialized area in EDA. It is where microelectronics and mathematics, both of which I'm very fond of, are applied together. Nowadays, the complexity of a chip increases rapidly and dedication to testing and verification becomes very significant, which I find very fascinating and want to research further in academia. I find this interesting that, this semester, I am taking courses in artificial intelligence and optimization techniques to explore further in this field as much as I can. I find that your program has a dedicated EDA sub-field, a specialized area that not so many places in the world have which I want to pursue further. I believe that my skills in electronics, programming, and mathematics which I have accumulated so far will make me able to get through those difficult courses and be a productive part of your master's students in this field.

Ultimately, what I want to pursue next in the future is a professional experience in the state-of-the-art semiconductor industry of Taiwan. Since semiconductor research requires pushing from industry needs, I'm ensured that there will be many research topics originating from the industry that is useful if solved and that will inspire me further in academia. Because of your program's strong collaboration with the business sector, I believe that this program will equip me with both theoretical and practical competency, which will complement each other especially when I study further for my doctoral degree and professional career.

I ensure that my dedication, skills, and passion in this field will make me a productive part of your master's program. Thank you for your kind consideration.

Nutchanon Jariyanurut
4 Nov. 2022