My statement of purpose for Technical University of Munich Asia.
Nutchanon Jariyanurut, 7 Nov. 2022.

I am writing this statement of purpose for admission to the Master of Science in Integrated Circuit Design at the Technical University of Munich Asia.

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 MCU. The project inspired me tremendously to pursue further in studying electrical engineering.

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. Even though my work at that time was only limited to analog verification automation, I found that these days, there is research in analog design automation as well. I found this research very interesting and, this semester, I am taking courses in optimization techniques to learn more about the foundation. I also found that your faculty has many professors who are active in analog design automation and optimization, which is a fascinating and pioneering field in IC design. It is also a topic that has very few active researchers, but your faculty has. This topic is the area where analog design and mathematics, both of which I'm very fond of, are applied together, and I believe my skills in analog, programming, and mathematics which I have accumulated so far will make me able to research the topic. I also found that your faculty professors' researches are very diverse. Apart from analog design automation mentioned above, there are also many topics that I'm interested in, such as sub-threshold design for low-power devices, watermarking for protecting IP such as trained machine-learning models, multi-processor architectures and ultra-high frequency circuits, that for me are very inspiring.

Additionally, your curriculum includes many courses in business and management in the semiconductor industry, which I'm very interested in because not so many places

teach an MBA along with the technical side during the master's degree. Since semiconductor research requires pushing from industry needs, I believe that understanding the business side of the semiconductor industry is inevitable for technical research, and both technical and business skills will complement each other when I work in the industry in the future.

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
7 Nov. 2022