**Statement of Purpose**

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When I was eleven years old, my father presented me with a children’s science fiction book about Tom Turbo, an intelligent bicycle. He solves mysterious cases with his inventors, Karo and Klaro. Looking at Tom Turbo talking to his friends, I imagined a day when humans would interact with machines as they do with friends, not via a keyboard or mouse.

With the aim of inventing a mechanical friend like Tom Turbo, I enrolled as a computer engineering student, became a member of a robotics club, and studied hardware basics. I studied everything from assembly programming to circuit designing, and experienced making an idea a reality. I made a ladybug robot for fun, and programmed algorithms for a robot soccer competition. I programmed thousands of lines during one vacation, and won several awards.

Joining an art club raised me to a higher level of sensory experience. Painting sharpened my aesthetic feelings and developed my persistence. A computer software development project can be considered to be finished when it fulfills a required specification, but painting an artwork can be deemed complete only when I decide that it is. I trained myself and tested different techniques to raise my standard of completion. To me, ‘state of the art’ does not simply mean attaining the highest level of technology, rather means reaching the level of an artwork that satisfies its creator and impresses spectators. I have tried to pursue completion in my work, as I consider myself to be another type of artist.

When I was considering my major for a master’s degree, my grandmother had a stroke, and had difficulty communicating with her family. At that time, I read an article about the author of “The Diving Bell and the Butterfly”. The author, Baudy, wrote his autobiographical novel using only one eye; his mind was locked inside his body and he could only blink his left eye. If there had been a device that would have enabled my grandmother and Baudy to communicate more easily, they could have spent more time with their families and enjoyed it more. I realized that a computer is an interface, and found that, even though technology is advanced, it will become meaningless unless it benefits humans. I studied HCI during the master’s degree at KAIST, and enjoyed inventing things for other people.

I focused on enjoyable and efficient interactive designs. I acquired user-centered research methodologies, such as user research and surveys. Based on the realization that computer novices are more familiar with touch gestures than they are with short cuts, I devised a gesture-recognizing keyboard. IR proximity sensors were embedded between keycaps, and the system recognized seven over-keyboard gestures that were categorized according to magnification, movement and deletion. Use case was written to enable keyboard users to eliminate the necessity of moving their hands between the keyboard and the mouse. In a normal case, when users want to increase the size of the font, they will need to type first and then move their hands to the mouse, highlight the text, select the font size, and move their hands back to the keyboard. My system enables users to highlight the text with the keyboard and then enlarge it using a gesture, eliminating hand movements. I finished my thesis in early 2011, and a similar idea was published by MSR in 2014.

After graduation, I had the opportunity to work at the UX Center at Samsung Electronics. In the first project, I cooperated with the IDEO team, observed an endoscopic procedure, and designed the better experience for patients and doctors. This equipped me with sound observational problem-solving and prototyping skills. During the Smart Home project, I was able to conduct research concerning worldwide users, including subjects from China, France, Germany, the USA and Korea. I designed user scenarios to fulfill the needs arising in each cultural area and to create synergy among Samsung’s various devices, including smartphones, washers, fridges, TVs. I also learned to work with specialists from different backgrounds, and to create synergy with them. I have been awarded “employee of month” by the UX Center three times, and have applied for six patents. As these opportunities were not available when I was a student, I have focused on being proactive and professional, and this has led to my current achievements.

While I learned a lot, I still sensed a lack of an international approach to thinking. I decided to live in one of the places in Europe for a year to broaden my outlook, and selected the birthplace of the Bauhaus movement. I met a German family who had just started a vertical farming business. Their vision was based on humanity and the environment. I built their website, and we met investors together. It was one of the most adventurous experiences of my life, and taught me communication skills.

I met many people, including young start-up entrepreneurs, agency designers, and students at Berlin University. They all had vivid visions, and inspired me to consider how to inspire other people in a positive way. I realized that I wanted to broaden the field of HCI via my ideation and hardware/software implementation skills, as this is what I do best.

I am currently working as a researcher at Chonnam National University. I am working on wearable interfaces with smart textiles. Smart textiles are extremely durable, allow for bodily movement, and are scalable to body size. I schedule research plans and manage students to assist with my study. I am learning how to find and focus on HCI paper topics, and how to manage my students. They trust me and do their best because share my vision with them.

Just as Tom Turbo ignited my imagination, I hope my invention will inspire someone to imagine a future world. Before someone else’s grandmother passes away, I hope she will be able to enjoy new technology resulting from my research output, and be able to interact more closely with her grandchildren. Lastly, I hope my research will help those people who inspired me.

Various universities, companies, and many people have enriched and trained my creative thinking and implementation skills. I believe that what I have learned through academic and practical experience over the years will help me to become a successful PhD student at the Max Plank Institute, focusing on flexible sensor surfaces and spatial displays under Dr. Jürgen Steimle’s supervision.