

## **SNU Commencement Speech Winter 2017**

As you know, I am a robot scientist. These days, when I say that I make robots, people tell me I am in the center of something called the fourth industrial revolution. But to be clear, I did not begin my research in robots knowing exactly how the times would change. I only wanted to make robots for those who needed it and sometimes I created them out of my own curiosity. The next thing I knew, I was in the center of a technological revolution.

But even so, I cannot stand here today and discuss all of life with you, for I still have a long way to go myself. I only hope to share a bit on how to live life a little more wisely in this upcoming world.

First, I would like to tell you the story of how our lab created a robot for people with disabled hands. As you saw in the clip, the robot is called the Exo Glove Poly. Not much after I returned from finishing my PhD in the states, I had the opportunity to participate at a conference with scientists who worked on technology that helped people with disabilities. Before the meeting, I had never had any interest in that class of robots. At the gathering, I talked to other scientists about helping people who were not even capable of eating by themselves. They invited me to join their effort, and I decided it was a good idea. I was thrilled at the thought of creating something using the new manipulator technology.

So I met a disabled man who could not use his hand freely. I asked him how I could better make a robot aid to help him eat. However, his response was: "I don't want a robot to feed me. Just please let my hand move again. I want to feed myself." I felt like I had just gotten hit on the head. I had ignored the most basic human desire and universal component of human dignity. Instead, all I had been thinking of was creating a trendy new robot.

From that point on, my students and I experimented with attaching strings to fingers and pulling on them and started creating an instrument that hardly resembled a robot. After seven years of making and breaking, the result was a soft hand support robot. Many people who need it have contacted us, and with great responsibility, we are now in the process of commercializing the product.

I am not telling this story to brag that I created a robot that did not exist before in the world. Even once my robot becomes commercialized, people will quickly want something newer. Because people are not machines, their desires are diverse, complicated, and ever-changing.

The technology of the fourth industrial revolution moves in the direction of humans and their various desires. Artificial intelligence, Internet of Things (IoT), robots, big data, Smart Factory, and so on, there are countless technological concepts that define the new age. However, the way I see it, everything in this new age is connected to humans, who are in the center of all of this. It is the age of the CREATOR, where knowledge, which anyone can access, can explosively grow and connect diverse knowledge, endlessly creating new things for humans. And what utilizes the vast information, connects, and fuses the useful technology to create technological progress is not artificial intelligence or robots, but we, humans.

Is there anyone here who thinks that because there is artificial intelligence smarter than them, there is no room for their idea? I can tell you with certainty. You are wrong. There are many things you can do and should do to make a better world for humans. Try growing your smallest ideas and sincerest hopes. Many hopes and dreams that other could not fulfill are awaiting you.

Are you thinking, "I am not an engineer, so I cannot make anything"? The key point of the fourth industrial revolution is creation through encounters and connections. Meet a friend who will code your ideas for you. The technology we need in the future – we can make it together.

Some of you here may already feel exhausted at the thought of the disparate world being connected infinitely through the fourth industrial revolution. Have you ever thought about what might be the cause of that “exhaustion”? I think another word for exhaustion is “perfectionism.” Everyone in this room today has fought through loneliness to walk the path of perfection. And the carefully sheltered world of academia rewards you greatly for your endurance.

However the fourth industrial revolution gives opportunities to those who do not wait to start once they are perfect. Opportunities come to those who put their imperfect selves forth and communicate with others and work with them. If we don’t get out of this trap of perfectionism in the upcoming age, we will not only fall behind but atrophy like a computer that cannot connect to the Internet.

I enjoy searching for new research ideas. I am always looking around for new things that people might need or want and in the process am trying to meet new people and discuss ideas. And there are times when I think, “Ah, this is really something new. No one has done this before” or “This is something we really need, but it doesn’t exist yet in the world.” In that moment of excitement, there is also fear. “Will it be possible?” And at this question, I want to run away from the idea. The first feeling after discovery is fear. But the people who believe in me, the students I believe in, and the safety net I have, allow me to fight against the fear and inch me closer to the idea until it turns into a reality.

Is it unnatural of me to want to give up and flee from an idea? What about younger people who have less experience than I do? The young people, who are fearful of what the future might be like, whether they will succeed or not, what do they feel when they get an idea on their hands?

Those who sit apart from the fourth industrial revolution can easily judge and say, “If you are really creative, if your idea is truly revolutionary, then just go for it. Knock yourself out.” This is quite dangerous. A young person who has a new idea is like a mother hen embracing an egg. It is only after they fiercely hold onto that idea that what is inside comes out into the world. If society does not create a safety net for young people to rid their fear and take steps into the world, then society will be walking on the bloody, wretched ground of broken eggs.

The fourth industrial revolution is where imperfect and different things come together for the birth of a new creation. The generation that used to enforce solitude and loneliness upon people for their personal perseverance is over. We do not know what the rock we are rolling up the hill will become at the top. We live in a society where the imperfect human triumphs. Therefore, I sincerely hope that you will have courage. The world goes on without pause and awaits the ball that you, the imperfect being, will throw at it. I root for all of you. Congratulations on your graduation.

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