LI YI-FAN

CEO, Hesai Photonics Technologies

Good afternoon everyone. My name is David. I'm an entrepreneur from China.

Today I want to just talk about a very specific topic - how a specific technology can go about disrupting the world.

My company's name is Hesai, as in the city of San Jose, in California. We were originally founded in Silicon Valley and now we are in China. We make different types of laser sensors for different applications. Today I want to share two examples of the technologies and products, and the impacts they have made to the world.

Before that, I want to share a photo. Does anyone recognize this? Where has it been taken?

Can you raise your hand?

Alright, a few.

Yea, this is us (where we are), this is Doha. Can anyone believe this is a photo I took yesterday? No?

Well that is true. That is the photo I took yesterday during the coffee break. I had a drone. It's designed and made by a Chinese company called DJI. I had it with me because it's so small and fits into my backpack.

I wanted to see what is Doha like from hundreds of meters above. So, it took me twenty minutes. I let go of the drone, and I had this amazing photo.

The point I'm trying to make here is that we are looking at things in a different dimension now. While you are still trying to make your Ferraris and Lamborghinis run faster, someone else in California is already making an electric car way

faster than any of the existing gasoline cars. While you are trying to push the limit for those electric cars, maybe, actually this is true, someone in China is making your cars fly. So, I think in this fast-evolving world, we are trying to see things in a different dimension, where you can jump out of this 2D dimension and to look at it in a different angle. And you come to a complete different conclusion and it is always disruptive.

So today I want to show you two products our company has been working on and how these technologies have been able to disrupt or at least make people change their minds about the existing industry.

Briefly background about my company, so three of us, we were originally founding this company in the Silicon Valley as we were discovering this new laser technologies. Me and my partners we got this from Stanford University and then we made this product out of this research result. And then we realize that using laser we can do a lot more things than publishing papers. So, we decided to take this technology and then we took it back to China and tried to commercialize it.
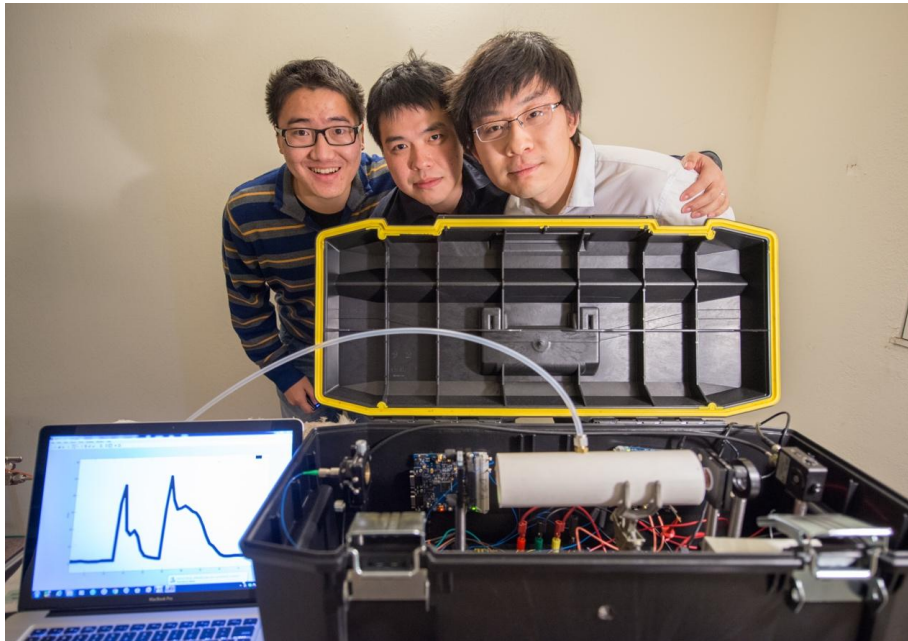
So, this is the first product we built. It mainly servers the oil and gas industry. Traditionally if you want to inspect gas pipelines or gas stations or any leaks, this device will help you identify them.

But now we work with the best drone company in the world and we can put the laser product on top of it. Now it is a fully autonomous system. This drone, it's able to autonomously inspect gas pipelines, gas stations, to find out leaks and then return without any human intervention. And we are the first one in the world to commercialize this product. And, it's very beautiful and mature product, and this is one of the things it's been used for high-rise apartments. If you couldn't get in, my drone can tell you, through the glass, what's happening inside the room. And this improve the efficiency by more than 50 times simply because using a drone is much faster than human labor.

Also, we worked on another laser product related to the auto industry as you probably all heard of, for the driverless car.

First, maybe I should share a few reasons why driverless car now is so big.

There are a couple of reasons people think it is the key factor for the boom of the driverless car. First, the sensor cost has been declining like crazy from the past ten years. A radar used to cost about ten thousand US dollars, now it's in the range of hundreds of dollars. Second, the emergence of artificial intelligence technologies and deep learning technologies allow people to interpret the results better. It allows cars to know its environments. And, the change of paradigm because of the sharing economy. If you think now you buy a car because you want to own a car, in the

future, you don't have to own a car. Some other company will own this car and will pick you up and drop you off without you having to purchase it. That's a huge difference because now you can afford to have smarter, and better cars. At last, but of course that's not the least, everyone around the world is aware of it. Global legalization has very specific times for certain functions to realize. For example, in the United States, by 2022, you must have AEB, it's automatic emergency breaking. That means that even if you want to drive the car on to a wall, your car wouldn't allow you to do that.

So, with all those given benefits, driverless cars become reality. But, we are not making driverless cars because it's too big a project. As you know, Google is making driverless cars, Uber is making driverless cars. We, as a small company, we make a very small part of a driverless car. If you ever seen a Google car, on top of the Google car, there is something called LiDAR.

It's a laser sensor. It gives you 3D image of what's around you. Pretend you are the computer in a driverless car, what do you want to know? You wanted to know the exact position, and distance, and speed of the objects and obstacles in front of you. The image processing technologies is not good enough. That's why people rely on laser to do that. A laser can travel to the object and be bounced back. And we analyse the difference, to know exactly each of the obstacles is. Believe or not, a LiDAR is the single most expensive part on the driverless car. The one on the top of Google car, it cost more than eighty thousand US dollars. We decided to focus on this part because it is such a critical component. And no more than five companies in the world can make commercially available LiDARs. And we are aiming to be one.

And this result gives you some intuition on how it works. Our product is on the bottom right. And if you look at the white Cadillac SUV, our LiDAR is on top of it. It gives you 3D images. And this is going to make your driverless car orders of magnitude safer. And that is why everybody uses it.

In the future, there are many more applications. We are not only making essentially the eyes of the robots, we are making their brains as well. With our devices, we see objects and environments, then plan our paths accordingly. That essentially helps the world be more automated.

I want to conclude with this slide because now if you still look at the conventional problem, trying to make a car run faster, jump out. There is always a better disruptive technology that's going to give you this perspective that you never had before. And I believe, this is opportunity uniquely belongs to us, to our generation.

Thank you.