

Interview with Kentaro Yoshifuji, a 27 year-old entrepreneur, CEO of Ory Laboratory Inc.

Ory Laboratory — a Japanese Robot Venture to Combat Loneliness

By Japan SPOTLIGHT

OriHime is a robot for communication created by Kentaro Yoshifuji, who calls himself a robot communicator. His secretary, Yuuta Banda, who is confined to a bed at his home in Morioka city in northern Japan, can watch and communicate with his boss in his office in Tokyo by manipulating OriHime in accordance with the application software for body communication. This is how people staying in hospitals can also communicate with their families and friends living far from them. Loneliness is a condition all human beings fear, but with the aid of OriHime you could see your loved ones and talk with them. This is an example of how a robot could serve a humanitarian purpose rather than posing a threat to humanity. *Japan SPOTLIGHT* had a chance to interview the creator of this unique invention.

Self-Introduction

JS: Ory Laboratory was founded in 2012. Could you tell us briefly how it came to be created?

Yoshifuji: When I was a child, I was physically feeble at birth and not able to attend enough classes at elementary school and junior high school for three and a half years. I felt a strong sense of solitude at that time. In particular, when I was so sick and could not move at all or had strong pains in my body, I remember I felt so miserable and overwhelmed by negative thoughts continuously. Loneliness is not mere sentimentality, but suffering that

pushes you into a corner where you cannot escape. While staring at a ceiling every day, I almost forgot how to speak Japanese. It is really true that solitude could be a cause of melancholy or dementia, a serious mental illness.

Given my experience, since 10 years ago when I was 17 years old I have been engaged in working on manufacturing goods, bearing in my mind that my ultimate goal in this work is mitigation of such solitude.

I have liked origami (paper folding) since my childhood. It is rather difficult to understand how to do it with just an origami manual. Such books just tell us we need to follow the instructions, but I could



Kentaro Yoshifuji, CEO of Ory Laboratory Inc.

not accept this even when I was in the third grade of elementary school. So I started doing origami in my own way, and continued to do so during the years when I was unable to go to school. This is how origami was the starting point of my manufacturing work and led to my work in creating robots. The name of my firm “Ory” comes from origami. I can show you how to make one of my original origami works, a rose called “Yoshifuji Rose”.

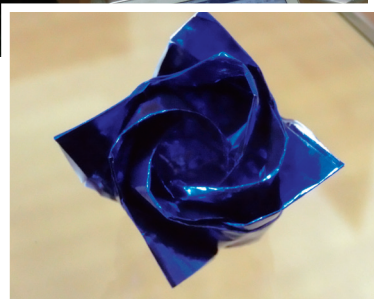
JS: You can make it without looking at your fingers. That is very ingenious.

Yoshifuji: I have made it so many times since my elementary school days. You can put a candy into a hollow inside it and give it as a present. I started the “Nara City Origami Culture Association” and became an ardent and devoted origami creator. The association once organized a special event for origami at Horyuji Temple in Nara, the oldest temple in Japan.

This interest in manufacturing a product was instrumental in getting me back to school. When I was a high school student, I wanted to create a wheelchair that could run safely and comfortably and also looked very nice. So I made an electric wheelchair that would not be shaken by ramps and it won several prizes, such as the Award of the Japanese Minister of Education and Science and the



Yoshifuji showing how to make one of his original origami works



A rose called "Yoshifuji Rose"

Award of Agilent Technologies from Japan Science and Engineering Challenge in 2004, and the Grand Award of the Intel International Science and Engineering Fair (Intel ISEF) for third place in 2005. After this, I received several requests to create new products in accordance with particular needs, among them goods to help people suffering from loneliness. Having found that there were so many people suffering from loneliness like myself in my childhood, I founded the origami culture association. I thought loneliness could be mitigated by creating links between the region and the association.

At this moment in Japan there are around 10 million aged people living alone, 65,000 children unable to go to school due to illness, and 170,000 people suffering social withdrawal symptoms. As I said, I was unable to go to school for three and a half years. My secretary, Mr. Banda, has been bed-ridden since he was injured in a traffic accident when he was four years old, and he had no chance to go to school. Having found so many other people experiencing solitude, I decided it would be worth devoting my whole life to mitigating such loneliness.

I became interested in creating a robot that could be a friend to human beings and allay their loneliness, and so I learned about Artificial Intelligence (AI) for a year. But the more I learned about AI, the more I felt I was on the wrong track in aiming to tackle loneliness. It should be human beings who reduce the loneliness of other human beings, not a computer program. Then I started thinking about connecting lonely people who are confined to bed with others, enabling them to make friends with each other and create pleasant memories.

At first, I thought about a teleconference, but I wanted to create a product that would make you actually perceived by anybody there

and enable you to sense your being there as well. This idea led to the invention of OriHime, our robot communicator. For me, this is a kind of "wheelchair" that can carry your heart to anywhere. With Mr. Banda's advice, we made it as it is now.

How OriHime Works

JS: How does OriHime make it possible for a sick child to join classmates on their excursions?

Yoshifuji: OriHime is an avatar robot controlled at a distance. Mr. Banda watches the screen of a personal computer in front of him in his bed and he can see my office and hear me through OriHime. He can manipulate OriHime's face by application buttons at his home and with this he can express himself. OriHime cannot automatically respond to anybody's voice but it is Mr. Banda who responds to it by using OriHime's face. With this robot in your classroom, you can see what a teacher has drawn on the blackboard and you can also respond to your teacher's questions and perhaps play with your classmates during a break. You can feel as if you were at school. If your friends are travelling with OriHime, you can travel with them and see the same spots and enjoy the same scenic views. If your friends put OriHime on the seat next to the driver's in a car, you can enjoy driving with them. You can feel as if you were with them wherever they may go. This is exactly what I wanted to create. We started our project to create a human linkage between families and friends, not to create a robot as such. But by taking account of all our users' views, including Mr. Banda's, we have been successful in achieving this evolution.

JS: Since OriHime has a face, the users will feel as if there is a treasured person with them.

Yoshifuji: Yes, that was a key in realizing this goal. When I created this robot, I was thinking how we could make anybody feel as if a human being were actually there with them and not a robot. We sometimes feel as if we do not exist or are being neglected by others, or as if we are of no use and have no reason to exist. But whether or not you exist in a place physically, if you are perceived to have your own place in communicating with your friends, this means you do exist there, I believe. You see that Mr. Banda can make OriHime wave its hands to all of you. Thus we can achieve interactive communication. This truly adds meaning to our existence.

JS: Did the development of this robot require a lot of effort?

Yoshifuji: Product development itself was not so difficult. The most difficult part of this OriHime project was to clarify what a "sense of existence" would actually mean and turn it into value. This was unprecedented and was a bit challenging.

Photo: Ory Laboratory Inc.



A sense of existence with OriHime for missing friends or families

JS: You mean that it is difficult to promote understanding of the value of “sense of existence”?

Yoshifuji: Yes. After all, there were not so many people showing true sympathy with the lonely. Most of them said that missing friends or families was just sentimentality and should not be treated as a serious problem. They said that teleconferences or Skype should be good enough and we would not need a robot to help address such loneliness. Some misunderstood this robot for AI, which is not the case.

Usefulness for Future Society

JS: There will be many lonely aged people in our future society, so I think there would be a stable need for your robot. What do you think?

Yoshifuji: In reality, I guess it would be challenging for elderly people to handle OriHime by using a PC or iPad by themselves. Their IT literacy may not be good enough. Therefore, we are now targeting somewhat younger people who are accustomed to using iPhones, iPads or PCs in their daily life.

JS: How much does OriHime cost?

Yoshifuji: At this moment, we are renting it for corporate use at a price of 30,000-50,000 yen per month. We have not started providing a service for individual usage yet, but if an individual really wants to get it, we are ready to rent it at a cheaper price on condition that he or she would collaborate with us, as in the case of Mr. Banda. We believe it is important to prevent any robot researcher from producing it spontaneously without a good understanding of the particular need for it.

JS: Among the corporations you provide the service to, are the majority of them hospitals?

Yoshifuji: Not necessarily. We had a rental contract recently with a wedding ceremony hall. The newlywed couple's grandparents living in the countryside or their friends living abroad can “attend” the wedding ceremony through OriHime. With OriHime, the couple could truly sense their being with them. In the case of hospitals, there was a second-grade elementary school kid hospitalized in an aseptic room for three months. He used OriHime for the three weeks until his departure from the hospital. Having been asked what he most enjoyed in using OriHime, he said he found it most pleasant to watch TV together with his family, even though he had a TV set in his hospital room. His family also said they were so happy to feel so close to him and it helped them psychologically.

JS: I am sure that schools use OriHime.

Yoshifuji: Yes, they do. A girl who had not been to her school due to mental instability for four years used OriHime five times during breaks between classes to play with the pupils and was able to make friends with those kids on her first day, finally joining in board games like “The Game of Life”. After that, having been asked by them to come to the school since they wanted to see her in person, she eventually showed up at a venue where many people get together after four years’ absence. This shows us we can expect a mental rehabilitation effect from OriHime.

Amyotrophic lateral sclerosis (ALS) patients are also using OriHime. Just as Mr. Banda works for our company with OriHime, anybody including such ALS patients can be of use to others too by using OriHime. These patients always feel sorry about being taken care of by someone else and thus if they find that they can be of some use to anybody, they would greatly appreciate it. This makes a big difference from their life without OriHime. Having a sense of being helpful to others — in other words, social recognition — is one of the most important basic human rights, in my view. For this purpose as well, I would like as many people as possible to use OriHime.

Collaboration with Overseas Ventures

JS: Are you thinking about collaboration with ventures in any other countries?

Yoshifuji: Not yet. I am not currently thinking about cooperating with overseas companies, since we have a big market here in Japan for an avatar robot like OriHime. China has a big population and thus they have potentially a big market as well. But Japan has a high literacy rate and good telecommunication networks, so it has far more advantages for robots than any other country. I believe that we have so many things to do here in Japan, and I would like to keep sending

a message to Japanese society that even physically handicapped or paralyzed people like Mr. Banda could make good contributions to our society with their desire and determination.

Japanese Robot Ventures

JS: Japanese robot ventures like your company are very active. Is there any particular reason for this?

Yoshifuji: One possible reason may be the Japanese attachment to robots. The word originates in the Czech *robota*, first used in Karel Capek's 1920 play *R.U.R.* and meaning laborer or slave. It thus had a somewhat sinister connotation originally in the West, whereas in Japan we have tended to regard robots as our friends, as often seen in our animations and popular culture.

JS: In the US and Europe, there are strong concerns over the ethical questions raised by AI, such as the possibility of AI and robots taking jobs away from human beings, and eventually even ruling over human beings. What would be a good remedy for such concerns?

Yoshifuji: I think we have the same concerns all over the world, including Japan, that with rapidly well-developed AI human beings will be robbed of job opportunities or that the growing thinking capacity of robots could reduce humans to a lower role in any high-level decision making. Industrial robots have been developed to replace human operations for the reduction of production costs, and it is certainly logical to pursue business success by cost reductions. On the other hand, I believe that human happiness comes from recognition of a confirmed role in business or society, so I am skeptical about how appropriate it would be to replace what human beings can do by robots. We are very unhappy about having no jobs or no roles in society. It is tough for anybody to have to stay in bed for their whole life being always looked after by others, and by contrast it is wonderful for people to maintain a role and mission in society and pursue a meaning in life. With my OriHime robot, I want to enable each person to discover his or her own unique role and mission through their own efforts. Then they would be truly socially acknowledged as human beings. My robot is devised precisely to help such people to be happy in this regard.

JS: I think you have achieved very productive relations between people and robots with OriHime. It seems to be an excellent example of the utilization of robots.

Yoshifuji: We call OriHime a robot, but it does not work by AI. I think it should be perceived as a tool, like a wheelchair. As I said, it is a tool for carrying human hearts.

Photo: Ory Laboratory Inc.



Secretary Yuuta Banda with OriHime

Mr. Banda is now using his chin to manipulate OriHime, which is very unusual. Hereafter, we are planning to develop many other ways to operate OriHime, such as one click with only one finger movement, operation by the power of a bite, or operation by a glance. Right now we are spending much of our time developing a computer input operation by just a glance, in collaboration with ALS patients. Although they are very conscious, they cannot speak and it is difficult for us to get to know their physical conditions. But with the new operation to enable them to manipulate OriHime only by the movement of their eyeballs, we will be able to establish good communication with these patients.

JS: Finally, what do you think about Japanese ventures, whether they are robot-producing ones or not? Having listened to you, I think it would be difficult to start up a new business like yours without a strong commitment.

Yoshifuji: Yes, I believe that passion matters more than knowledge or experience in starting up a business. You need a long-term vision of your ideal world and the enthusiasm to achieve what you have been longing for. The more passion for your vision, the more possibility of realizing it. In my case, since founding my company from nothing, I have been supported by many people. Passion will empower you to believe in yourself, as well as other people to believe in the relevancy and feasibility of your project. I believe many venture firms with this strong passion could achieve amazing business success.

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Written with the cooperation of Naoko Sakai who works for the NPO Yokohama Community Design Lab and is also a Hama-link Project leader and writer for the Yokohama Keizai Shimbun.