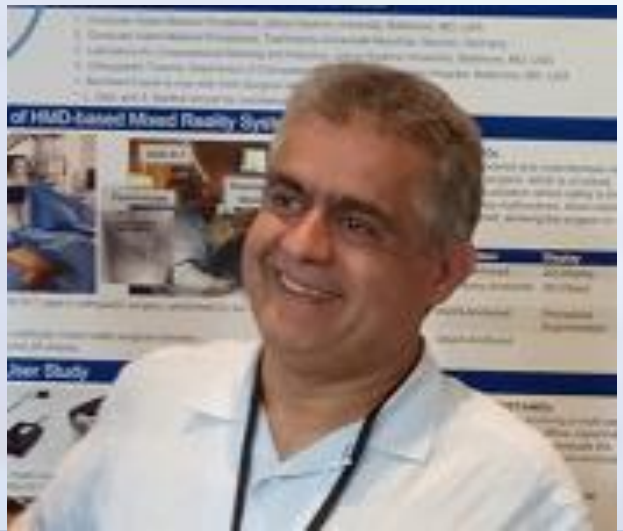
understand that the problems are more complex. At the beginning, you ask the surgeon, "What do you need?" and the surgeon says, "I need this and this and this and that," and you say, "This is easy, I can do it," but then the next time when you show it, you find out that everything that they told you has itself 20 variations. They say, "I need this," but then each of them is not just an answer, it's a family of possibilities. You learn that you have to be much more curious also, you have to search, you have to find.

And to listen better?

To listen. You have to learn to listen. From surgeons, you learn that you have to listen and I always tell my students, the first time a surgeon tells you something, write it down and don't act on it, because 90% neither you understand it well nor he told you everything: since the surgeons know that their students cannot understand that. They simply write things such that a junior understands it. I tell them write it down, talk to the same person a week later, two weeks later, at lunch, at dinner, at a conference, and then try to accumulate and discover the real problems behind it, because the problems are usually more complicated than it looks like.



This is very precious for our readers: you are suggesting the way we should listen to surgeons.

Completely. In fact, I asked one of the most famous and most knowledgeable, expert surgeons at the Eye Institute of Johns Hopkins. He does peeling in eye surgery: which is in order of tens of microns, so the majority of the surgeons do that with a contrast agent, and he does it without. I asked him, how can you take this under the microscope, and something that you cannot even see, take it completely out? His answer to me was, an NBA basketball player can close his eyes and he can still hit a target. After 30 years of knowledge and experience, this becomes just an intuition. This is what we have to understand as people, some students when they are very young, they think that in 5 years they can build a robot that will replace a surgeon. If you can make in 5 years a robot to replace Michael Jordan in a real game with another 9 NBA players, you can make a robot that can replace surgeons. It's much more complex, because it's accumulated knowledge into an automatic and very fast decision-making and reaction, in the middle of microsurgery or very delicate surgery.

"Our life depends on it..."

This is not only going right and left and cutting and suturing. It's not an algorithm. It's accumulation of multi-dimensional decision-making, based on multi-dimensional data and a holistic, physiological view of their patient. When they do brain, heart surgery, any surgery, they are doing very complex decision-making, instantaneously. Our life depends on it!

Guest