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Harmonic Bionics is a robotics company focused on enhancing rehabilitation therapy through automation, dynamic data capture, and connectivity.

[00:00:10.860] - Christopher Prentice - CEO & Co-Founder

Our goal at Harmonic Bionics is to create technology that augments the therapists in order to achieve optimal results.

[00:00:19.080] - Dr. Robert Lee - Physical Medicine & Rehabilitation Physician

As the population ages, we're seeing more and more neurological injuries and strokes in the country right now. There are somewhere between eight to 9 million stroke survivors living in the US alone, which is a good thing, because that means more stroke survivors are surviving the stroke. But it also means that there are millions of people in this country that are living with impairments from those strokes. Unfortunately, neurorecovery is very labor intensive. There are not enough therapists in the country to take care of all of those patients. Robotics and technology can alleviate some of this labor intensive therapy.

[00:01:00.090] - Youngmok Yun, PhD - CTO

We are inventing a new type of robotics technology. Traditionally, the robotics in factory environment is a very fast, strong, but it is dangerous, so it works only in a caged environment. But our robot always interact with the human body. To make it possible, we had to invent new mechanical, electrical software components. And some of this new technology is Harmony SHR.

[00:01:31.300] - Ashish Deshpande, PhD - Chief Research Officer & Co-Founder

There's less research, less technology development on the side of upper body, and that's because arm and hand control is quite complicated. There weren't any technological advances happening on that specific direction. So we thought, let's focus on that problem.

[00:01:48.470] - Rohit John Varghese - VP Research & New Product

With the richness of data that Harmony SHR sensors bring, and their fidelity and accuracy, Harmony could be a window into the actual behavior or performance of the human nervous system and the human neuromuscular system.

[00:02:03.030] - Dr. Robert Lee - Physical Medicine & Rehabilitation Physician

So I think the problem with our clinical assessment right now is some of it is somewhat subjective. If we are able to get devices such as the harmony into more centers across the US, I think it will allow clinicians to gather a lot of data that we typically don't have access to. So the force generated at a joint, the actual range of motion or the joint angles in a particular point in time. Never had a patient who has been in the harmony device complain that they're tired of the therapy. They actually want more. I have a waitlist of people who are just dying to get back on the device right now.

[00:02:42.210] - Ashish Deshpande, PhD - Chief Research Officer & Co-Founder

In addition to being a therapy tool today, it is also a research tool for therapies for tomorrow. So I'm working with researchers from all over the US, top neuroscientists, top rehab doctors, to explore how we can understand how the brain is recovering. We can even create predictive models of, like, if person a comes in, we know their demographics, their age, their comorbidities, and we can hopefully predict how well they are going to recover, and based on that, we can tailor treatment for them.

[00:03:16.080] - Dr. Robert Lee - Physical Medicine & Rehabilitation Physician

A lot of this information will kind of transform the way we kind of practice medicine and how our therapists are able to tailor their therapies specifically for this patient and seeing in real time how the patient's muscles and joints are improving.