

Remote Contactless Bio-Sensing Technology for Authenticating and Monitoring the Physiological State of the Elderly, Children, Patients under Physicians Care and Telemedicine**Lydia Katz**
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Lydia.katz@gmail.com**Interview conducted by:**
Lynn Fosse, Senior Editor
CEOCFO Magazine**CEOCFO: Ms. Katz, what is the idea behind ContinUse Biometrics?****Ms. Katz:** We are a bio-sensing company. We are developing a sensor that can remotely and contactlessly authenticate and monitor the physiological state of a person. By that I mean that we have the capacity, without any contact to the human body, to detect a variety of physiological parameters at a distance – such as heart and respiration rate, blood pressure, glucose levels, and more.**CEOCFO: How does it work?****Ms. Katz:** We detect vibrations. You have to think about the fact that every organ in the body moves and vibrates. Molecules also move and create tiny nanoscale vibrations. Basically, these vibrations are propagated to the tissues, for instance the skin, and we can those vibrations. For instance, the vibrations created by the beating of the heart are propagated to the chest. What we do is illuminate, with a standard IR laser, the particular area of interest. We capture the back scattered speckle spatial and temporal statistics with a fast camera and we reconstruct the signal with special algorithms. We can then isolate different parameters and signals. For instance, when illuminating the chest area, we can easily isolate the vibrations linked to the heart beating and those linked to respiration - lungs opening and closing and air flowing in and out. Therefore, we can isolate those parameters and signals and reconstruct their medical significance.**CEOCFO: Where are the sensors placed and when would they be used?****Ms. Katz:** For the purposes of remote or clinical monitoring, the sensors could be placed close to a patient's or a user's bed. When used for access control purposes (we can authenticate people based on their unique heart signature); you could imagine a sensor that is placed close to an entry door to a secure building. Our sensor will be quite small - therefore, it could be integrated either in consumer electronic devices or used as a standalone device. It will be very flexible.

It is important to note that we are not a hardware company. We only provide reference design to manufacturers, OEMs and medical device companies. They deal with the manufacturing, they integrate it in a wider offering, they create the right standalone device given the use case they are addressing. They decide on these use cases.

CEOCFO: Where are you in the development process?**Ms. Katz:** Currently, we have a few prototypes. They were used for testing and proof of concept and trials. We will start commercializing towards the end of 2017. We are currently developing a second – mobile – platform, which will work with

an add-on that can be clipped onto a smartphone and that can basically make use of the smartphone's capabilities by adding just a small laser and a filter to its camera.

CEOCFO: *There are a fair number of people looking at this arena. What sets your technology apart? What is it about the ContinUse Biometrics technology that makes it better?*

Ms. Katz: First of all, I think there are not that many companies looking that can really claim to do bio-sensing remotely and contactlessly. A lot of what we see in the field are wearables. Wearables have problems inherent with the actual technology. They are not always highly accurate. They are limited in the number of parameters they can detect. They can also create problems of compliance.

We are completely non-contact. We are highly accurate, because we detect nano-scale movements. Therefore, not only are we accurate in terms of our results, but we also have a depth of analysis that is compares with that of standard medical devices. We can simultaneously detect more than fifteen parameters starting from subject's authentication, heart rate and cardiograph, respiration rate and respiratory graph, blood pressure, muscle activity. Down the line, we will be adding, for instance, parameters such as heart and lung sounds, glucose and alcohol levels, and more. With this we would be able to detect if a person has consumed too much alcohol or if they should be for instance, alerted if attempting to drive a car. Basically, we have a much, much wider scope and a very high level of accuracy. That is really what sets us apart.

CEOCFO: *How do you decide what to look at first, such as blood pressure before alcohol content, heart rate before, glucose? What is the strategy?*

Ms. Katz: I think that is a very good question. We are confronted with that every day, because the technology is so wide that we can really look at so many fields of applications. One of the ways we prioritize is basically to say, looking at the market, what is the largest unmet needs and what is, in terms of technology, the easiest and fastest for us to reach? We try to balance both the market and technological opportunities, and that is how we prioritize. We have a very big R&D team, which is constantly working on bringing new parameters to our platform – so we are constantly upgrading our offering.

“We are developing a sensor that can remotely and contactlessly authenticate and monitor the physiological state of a person.”- Lydia Katz

CEOCFO: *Who has been paying attention? What types of companies? What types of industries?*

Ms. Katz: We have quite a lot of traction with Tier I companies. One of the domains that are obviously very, very interested in what we can offer is medical. I mentioned earlier the case of doing remote monitoring for patients suffering from chronic diseases such as CHF. That is a big use case for us and it is very interesting to the medical device and big pharma companies, so we are working on that. We have done some proof of concept and trials with Tier I automotive manufacturers. One of our investors is Tyco Security, now Johnson Controls International, and we did a POC in their offices, where we authenticated their employees and used our system for access control purposes. We are also working with several Tier I OEMs in both industrial and consumer electronics domains, on various use cases. For instance we worked with Lenovo (also one of our investors) on some consumer wellness applications.

CEOCFO: *When you are working in the medical arena is it difficult to find people who will have the sensor present, but will also let you monitor in another way so that you can see if you are getting true readings?*

Ms. Katz: We are currently in discussions with medical companies to start clinical trials, where we will for sure get to discuss such issues with patients. What we have to consider is how intrusive existing monitoring solutions are. We have an expression for that; we call it the spaghetti effect, because of all the tubes and machines that are hooked up to the patient. With just one small sensor, placed closed to the bed, we can monitor a variety of vital and other physiological signs. I think that is a major advantage and I think a lot of patients will definitely be willing to use our solution, both in a clinical setting and fore home monitoring. They will be able to monitor their condition continuously and be able to detect deviation from the norm much sooner.

CEOCFO: *Are you funded for the steps you would like to take? Are you looking for partnerships or additional funding?*

Ms. Katz: Our first round of funding took place two years ago; we raised money from three investors, Lenovo, Tyco and an Israeli fund called Olive Tree Ventures. We are currently working on our B round, which will take place now in the first semester of 2017.

CEOCFO: *What has been surprising throughout the process? What has happened that you did not expect?*

Ms. Katz: That is a question that we do not necessarily hear regularly! To be very honest, we always knew that the medical sector was a very interesting field. However, it was not necessarily what we perceived to be our main market, or at least not the first one we would enter, as we thought it would be very hard to penetrate. It turns out a lot of traction we are getting comes precisely from that domain – and its clearly emerging as a low-hanging fruit. So I think we can say the way we ended up prioritizing target markets has turned out to be a little bit of a surprise for us.

CEOCFO: *Why should people pay attention to ContinUse Biometrics today? Why is the company important?*

Ms. Katz: I think we will fundamentally change the way both healthcare and consumer health work today. I do not think there is any company that can really claim to come close to what we do with our groundbreaking technology. We really have the potential to create a true revolution in the bio-sensing world and that is quite exciting.

