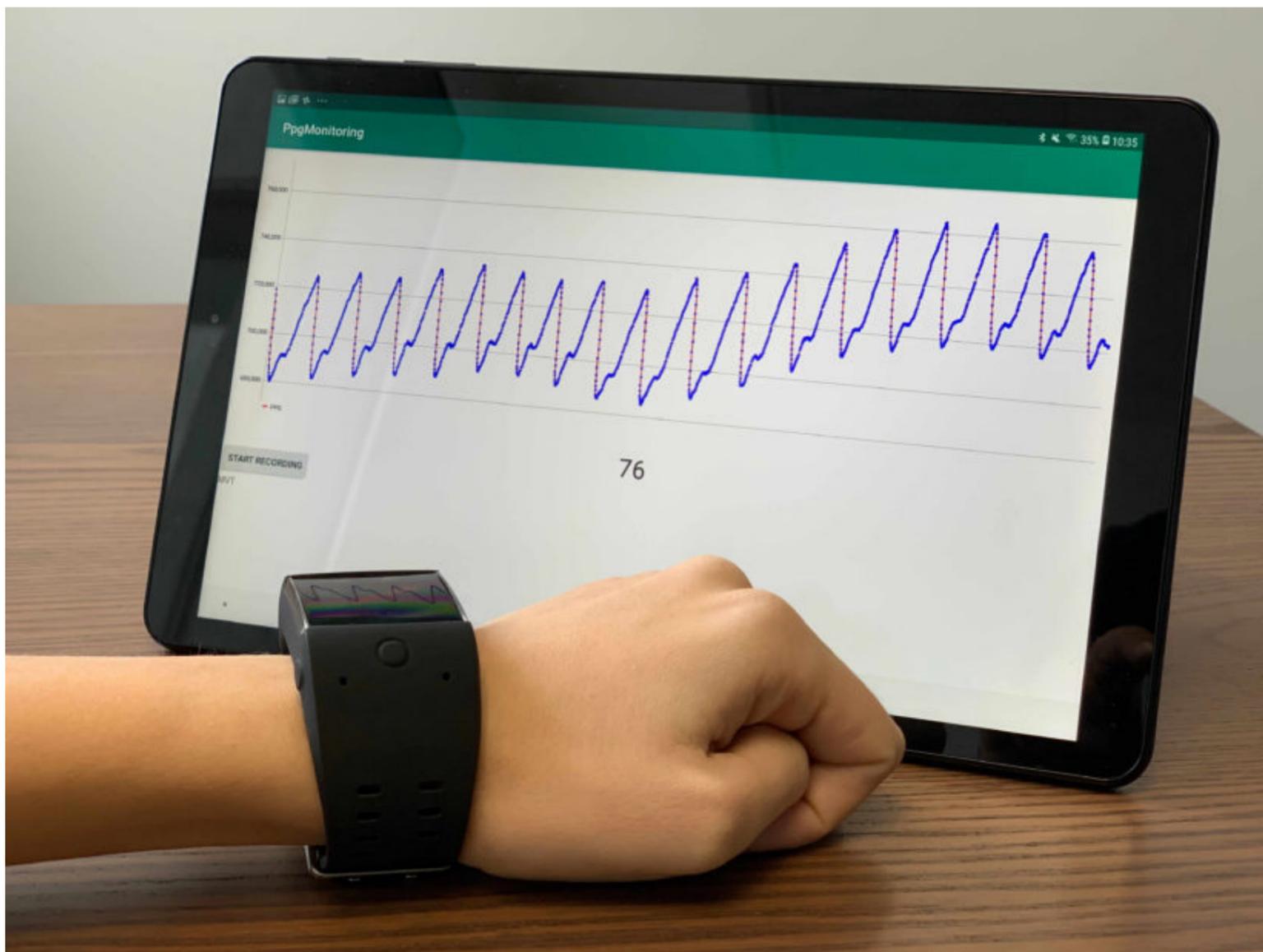


Mypulses leverages the potential of the pulse wave measurement

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Interview with John Dennis, Founder and CEO at MyVitality

Where does the idea of mypulses come from?

The idea started around 2014 when someone I personally knew was feeling a bit burned-out with low energy. Among the different interventions we suggested, acupuncture was the one that worked the most. That was the time when I started to think a lot about energy flow and Qi, a very important component of the traditional Chinese Medicine (TCM). Qi is our personal energy, not a physical phenomenon, as believed in some western interpretations of the TCM, but instead the result of our blood flow. Indications of the quality and level of the blood flow and therefore of the energy flow are indirectly given by the pulse reading. This is the origin of mypulses concept and explains our focus on the pulse measurement.

What kind of scientific evidences have you collected so far supporting your idea?

Initially we did a couple of studies in collaboration with the CSEM where we found positive correlations between pulse measurements and the observations by Chinese medical doctors about the energy state. We then started to focus on energy and fatigue and we collaborated, among others, with Prof. Grégoire Millet at UNIL, who is specialized in fatigue related to sport. As of today, we have done over a dozen studies and we aim at collecting more data in the next future through further research.

What do you look at in pulse waves? What's unique of mypulses technology?

The main difference with the other players in the field is that while they only measure the heart rate frequency with a beat-to-beat analysis, we measure the whole pulse form and we can examine over 500 different features. Since when Dr. Masih Nilchian joined our team, we applied machine learning on the data we generate by measuring the pulse. Even considering only two out of the 500 features, we have over 90% correlation with stress, mental fatigue, identification of different sleep stages and we can discriminate with accuracy between mental fatigue, sleep deprivation-based fatigue and sport fatigue. In our last study with UNIL students, we examined them before and after exams and we could predict who was mentally fatigued with close to 100% accuracy.

How do you choose the wave features to analyse?

So far, we are using only two wave features to avoid overanalyzing and eventually coming to false truths. For the data mining, Dr. Nilchian built up a powerful platform which determines the most effective learning method for an indication (health, sport, etc.) that automatically picks up the best features. A report is automatically generated indicating the most informative features together with the optimal learning techniques used.

What about your competitors?

We do not know any so far but for sure they are coming. There is no reason for which big companies would not look at this and imitate our efforts. However, we believe we still have two main advantages: (I) the extensive patents and (II) the high amount of "trade secrets". Certainly, big companies could find them too, but it would require them some time (it has taken us over four years), and we would be hopefully covered by patents.

How do you see mypulses integrated in the healthcare system?

That's our biggest challenge and we are currently looking into how this could be done. A Horizon2020 consortium aimed at facing this challenge and bringing in different healthcare systems is our next attempt and strong hope. We would like to have the chance to validate therapies using our pulse wave analysis as an integrated part of the healthcare system. Fatigue is a very important indicator of how we feel, and we could monitor and validate if various therapies are working by looking at the fatigue state through the individual pulse wave and its fluctuations. Along the same line, we are also working with a private clinic to evaluate the efficacy of therapies based on the pulse wave form.

What about the next mypulses steps?

More research and clinical work to collect further evidences are the priority. A few additional publications are coming out this year as well as an additional patent. We have quite a few clinical studies planned including one pilot study for a clinical group. We are going to collaborate with King's College, Cambridge, and hopefully be part of a Horizon2020 consortium to look at how we can integrate our technology into personal health care. In terms of products, we already have some apps and we are developing a bracelet. However, we know we cannot compete with the big wearables industry and therefore selling such a product might not be successful. What we believe, instead, is that since wearables currently do a very limited number of things (e.g. activity tracking), there will be soon a need for new biometrics, and that's where we will step in.

Finally, why at the Digital Health Hub?

We moved to Biopôle in 2016 and we were the first coming to the Hub. We love it and we can see how fast it's growing. We look forward for future collaborations and fruitful interactions!

www.mypulses.com

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INTERVIEWS

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