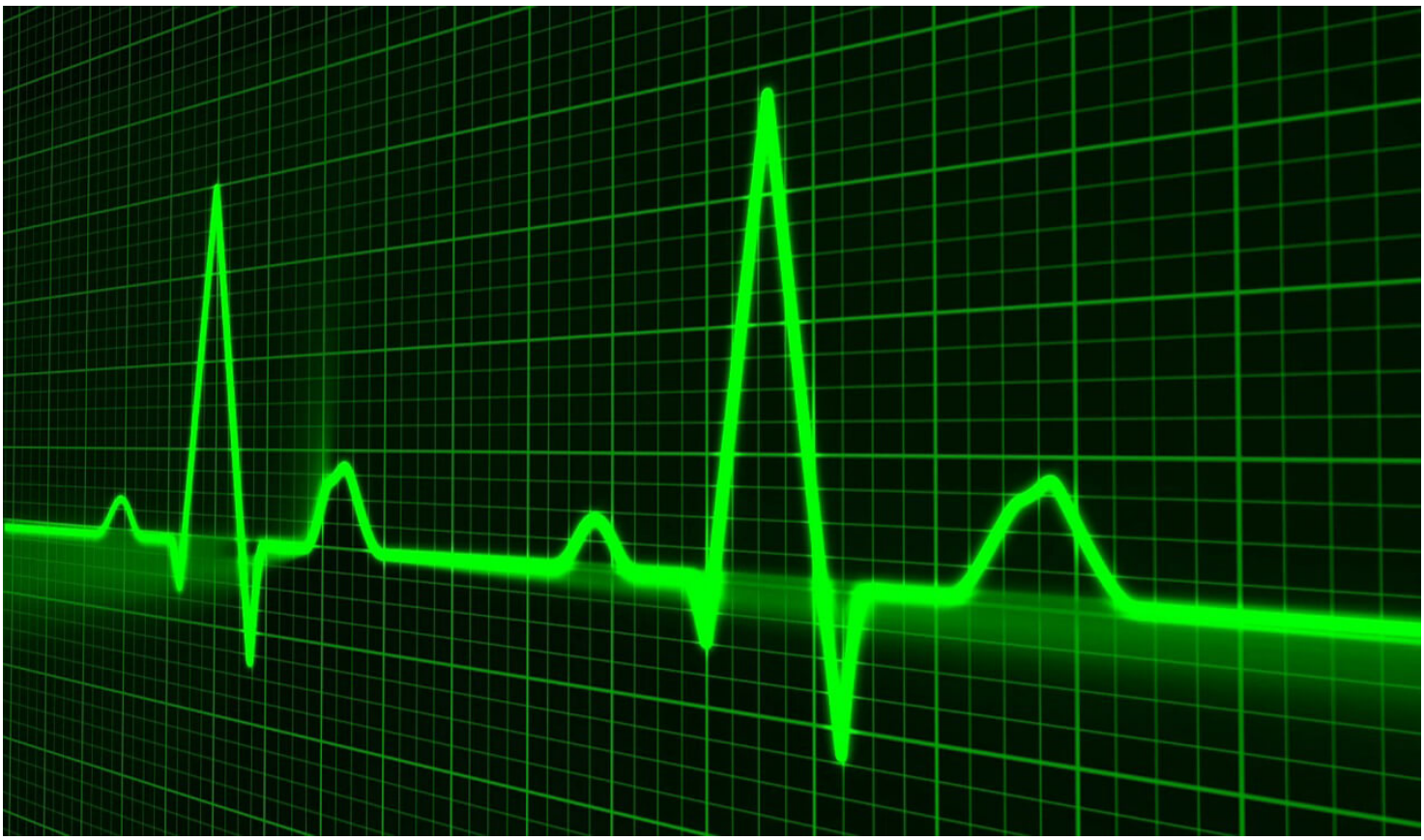

Medical innovation | Photo source Pixabay

NEW METHOD MEASURES VITAL SIGNS WITH RADIO WAVES

SPORT & FITNESS

Engineers have developed a touch-free way to monitor blood pressure, heart rate and breath rate from a distance.

Engineers at Cornell University have developed a method for gathering blood pressure, heart rate and respiration without using a blood-pressure cuff or stethoscope. Instead, they use a radio-frequency system similar to the RFID tags used as anti-theft devices in stores, and recently in smart shopping bags or to track luggage at airports. The tags developed by the researchers emit radio waves that bounce off the patients' body and send the data they gather to an electronic reader. The reader can be located at a distance from the patient, allowing physicians to remotely monitor patients.

According to Edwin Kan, professor of electrical and computer engineering, and head of the group that developed the device, the system uses "near-field coherent sensing," to direct the electromagnetic signals into body tissue. This allows the tags to measure internal body movement such as heartbeat and pulse. The tags are powered by a central reader, and each tag has a unique identification code which it transmits along with its signal. This allows up to 200 people to be monitored simultaneously from one central reader. Explains Kan, "If this is an emergency room, everybody that comes in can wear these tags or can simply put tags in their front pockets, and everybody's vital signs can be monitored at the same time."

Kan and his graduate student Xiaonan Hui came up with the idea for the tags when considering ways to monitor patients' vital signs without interrupting their sleep. Kan and team are working with fiber scientists and apparel designers on ways embroider the tags directly onto clothing using fibers

coated with nanoparticles. This could allow the clothing itself to monitor vital signs in real time. Explains Hui, “For every garment in our daily use, there could be a tag on them, and your cellphone will read your vital signs and will tell you some kind of information about your condition that day. Will all future clothing eventually include tags for monitoring our health?

5th January 2018
Email: kan@ece.cornell.edu
Website: www.kan.ece.cornell.edu
Contact: www.kan.ece.cornell.edu/people/edwin-kan