

## **Georgia Tech Students Working to Improve Parkinson's Patients' Lives**



It was a light-bulb moment: the idea sparked with a TI wristwatch. Georgia Institute of Technology bioengineering PhD student Teresa Sanders, a TI Fellow through the TI Leadership University Program, was working with Emory University Parkinson's Disease specialists, and received an [eZ430-Chronos watch](#) [1] from TI. She had a thought: A watch with an accelerometer could measure limb tremors and be paired with other tools to assess patients with Parkinson's disease (PD).

Now, she's setting out to prove it - and in turn, improve lives.

Sanders is hoping to create a new system that can help patients continually monitor symptoms - even at home -- so that they can be correctly medicated. "We believe that the new monitoring system will be very helpful in regulating their treatment," Sanders says. "We want to increase the number of good hours PD patients have, and that's what I'm focused on." PD is a progressively worsening nervous-system disorder that affects movement. It can cause tremors, slow movement, and cause muscle stiffness. In many patients, the effects of medications fluctuate substantially throughout the day, and monitoring the symptoms and adjusting the medication dosage is difficult and time-intensive.

Sanders, who worked as an electrical engineer before pursuing her doctorate degree at Georgia Tech, connected a [Metawatch](#) [2] wristwatch (which uses TI's [MSP430](#) [3] microcontroller and [CC2564](#) [4] Bluetooth®/Bluetooth low energy IC to store and send information respectively) with a smartphone (worn on the body to track movement speed and trunk stability, and process tremor information from the

watch) to make it feasible to automatically monitor symptoms statistics. "We're trying to do something that is easy for the patient to use and can remotely transmit information," Sanders says.

While smartphones are used today to measure tremors (with a patient holding the phone), the theory that Sanders is proposing, of connecting the watch to the phone, is novel. "It's still experimental because it's so new," Sanders says. "Right now, we're collecting data in the lab. We need to do a pre-clinical trial and benchmark the system using real patients. But we're pretty excited about it."

Sanders has been researching the subject for about six months, and has partnered with Emory University researchers who have provided a wealth of data and are also a part of the project's provisional patent. Georgia Tech undergrad student Lydia Hylton, who competed for and won one of the school's President's Undergraduate Research Awards (PURA) after reading research papers on the project and writing a proposal, will also be working with Sanders this summer.

"We're trying to improve the quality of life for PD patients," says Sanders, whose efforts are contributing to earning her PhD. "While working in the electrical engineering field, I was intrigued by the discoveries in bioengineering. This project is a great opportunity to apply bioengineering research."

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<http://www.mdtmag.com/news/2013/04/georgia-tech-students-working-improve-parkinson%E2%80%99s-patients%E2%80%99-lives>

**Links:**

[1] <http://www.ti.com/tool/ez430-chronos&DCMP=Chronos&HQS=Other+OT+chronos>

[2] [https://estore.ti.com/MSP-WDS430BT2000D-Bluetooth-Wearable-Watch-development-system-with-Digital-display-P2447.aspx?gclid=CMzHq\\_nw5LYCFUff4AodS2cA3A](https://estore.ti.com/MSP-WDS430BT2000D-Bluetooth-Wearable-Watch-development-system-with-Digital-display-P2447.aspx?gclid=CMzHq_nw5LYCFUff4AodS2cA3A)

[3] <http://www.ti.com/msp430>

[4] <http://www.ti.com/bluetoothqfn-pr>