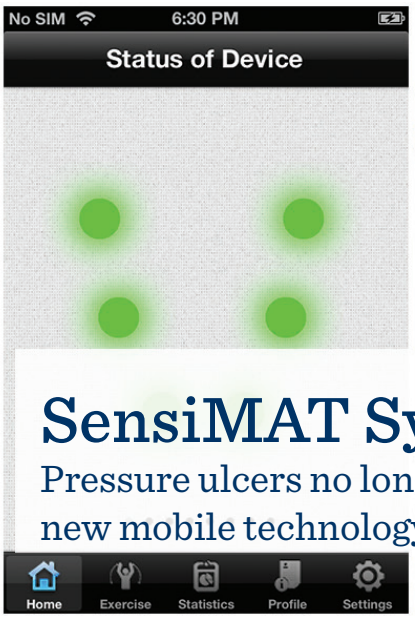
Sheridan

UNDERGRADUATE RESEARCH SUCCESS STORY



The SensiMAT Systems team

SensiMAT Systems Inc:

Pressure ulcers no longer a sore spot with new mobile technology

Pressure ulcers, also known as bed sores, are more than just a pain for elderly and immobile patients, including those in wheelchairs. Not only can they hurt, they can lead to serious infection, with some requiring surgery and months of rehabilitation.

And they can happen fast. If a patient sitting in a wheelchair doesn't change positions in 30 minutes, a pressure ulcer can start to form. For patients with no feeling in their lower limbs, and therefore unable to feel the warning pain, this can be especially dangerous. "It's a really challenging problem and there isn't very much media attention devoted to their devastating consequences," admitted William Mann, Co-Founder of SensiMAT Systems, a Toronto-based digital health company that designs assistive devices.

THE SENSIMAT SOLUTION

These sores cost the health-care system hundreds of millions every year and cause immeasurable discomfort for patients. To ease the pressure, SensiMAT created a solution.

William and his company introduced the SensiMAT for Wheelchairs. It's a thin mat containing pressure sensors that is inserted underneath a wheelchair's cushion. It's designed to alert a user when there is a high amount of built up pressure against the skin, confirm the relief of that pressure through a lateral lean or lift-off, and analyze their pressure relief regimen.

But SensiMAT had a problem – how to transfer the information generated from the mat to the patient.

"We created the hardware [the SensiMAT itself] but this was essentially useless without a way to collect, examine and share the data wirelessly," said William.

His company needed programming talent to create a mobile app that would gather the mat's readings, successfully inform patients of the pressure points and encourage them to perform "pressure reliefs" to prevent sores. Through a referral from HalTech Regional Innovation Centre, SensiMAT found the right support at Sheridan.

THE RIGHT SUPPORT

Funded through the Ontario Centres of Excellence (OCE) Technical Problem Solving program, Sheridan Undergraduate Research assembled a project team from the College's School of Applied Computing.

Two students and instructor Robert Skoczen connected with William to design an app for the iPhone using Bluetooth technology. Rolling up their sleeves, they developed the graphical user interface and the data collection processes. In doing so, they created the first and only mobile app of its kind for wheelchairs in Canada.

> "Sheridan helped us bridge the gap between idea and commercialization. With their help, we have the ability to tackle a massive healthcare challenge that will have international reach." – William Mann, Co-Founder, SensiMAT Systems

Michelle Skolly, one of the students from the computer engineering technologist program in the Faculty of Applied Science and Technology, was one of the app's architects.

"There's no substitute for real world experience," said Michelle, who graduated in June, 2013. "I was able to be on board from near inception to near completion which was so helpful for my understanding of how projects work."

Michelle believes the project sharpened her programming skills and boosted her confidence, knowing that she helped create software that will have real-world impact. She's excited about seeing this technology benefit patients, and is filled with pride to be able to say, "I helped create that prototype." She won't have to wait long.

"We can now demo the system for rehab institutes, in long-term care and nursing homes, and with wheelchair users that live in the community," said William. "This has led to clinical testing, including testing in major rehab centres in the US, and we already have a handful of pre-orders for this system."

With commercial sales in the very near future, William credits Sheridan's ability to adjust to changing requests.

"As a start-up, we're constantly changing things, so we needed access to the students and we got it," he said. "We were at Sheridan every two weeks checking what was going on and we could modify things on the fly. The students were accessible, flexible and able to adapt to our changing demands."

The app is showing so much promise, the company is also developing a web portal that will allow healthcare workers and physiotherapists to connect with the patient's app and monitor their progress remotely.

Federal Economic Development Agency for Southern Ontario
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SensiMAT systems

Can Sheridan help you solve a problem? Contact us today to get started:
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