Diagnosing heart conditions by smartphone

August 3 2015

In collaboration with an international scientific project team, a Simon Fraser University doctoral student is paving the way for us to be able to one day diagnose heart conditions using our smartphones.

Alexandre Laurin is working with the Mathematical and Mechanical Modeling with Data Interaction in Simulations for Medicine (M3DISIM) research group at École Polytechnique in Paris, France.

Laurin will graduate with his doctorate in biomedical physiology and kinesiology (BPK) this fall. He and the Paris team are programming a human heart's mechanics into a 3D computer model of the heart and thorax (chest, including the thoracic cavity and the thoracic wall) that they've developed.

"You need the model first to understand what's going on, then you can build the app for a smartphone," explains Laurin.

The model, built last year in Paris, simulates the vibration of a human thorax and then manipulates or pushes the vibration to evaluate the model's reaction.

Once they've finished programming their model with an actual heart's mechanics, Laurin and his collaborators will analyse how a beating heart affects the thorax.

Laurin stresses: "Precise self-diagnosis by phone is probably 10 years into the future."

He laid the groundwork for this research with the Paris group last summer after winning a Graduate International Research Travel Award from SFU's Office of Graduate Studies and Postdoctoral Fellows. Laurin will return to France in October to devote a year to perfecting the model and finally developing an app.

Provided by Simon Fraser University