Sigmascreening B.V.
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www.sigmascreening.com

12 – 30 weeks project for student of technology / engineering:

Mammography research setup – stepper motor controller

Background

Sigmascreening is an innovation company in mammography (breast x-ray photo). For good quality x-ray photos without blurring, the breast needs to be immobilized. Many people consider this "compression" quite painful, particularly women with smaller breasts. Normal mammography machines only display the compression force, but using the same force for a large or small breast results in very different pressures (force per square centimetre). Our Sensitive Sigma Paddle measures the contact area of the compression plate with the breast and calculates the mean pressure. With 8 LEDs as a display, the technician is guided to apply the same level of pressure – corresponding to normal blood pressure - for all different sizes and shapes of breast. This has been proven to reduce pain experience without loss of image quality. In R&D, Sigmascreening collaborates with the Bioengineering and medical Physics department of the Amsterdam UMC (Location AMC).

Project

For a mammography research setup, the motorized breast compression plate (already built) and the breast support table (still to build) need to be programmed to move up and down with independently controllable speeds. The motor controller needs to work together with two sensor inputs that measure the forces on the breast. A user interface has to display compression information and has to allow the operator to change motor speed settings. The research unit will be used on (silicone) breast phantoms to test that everything functions safely.

Profile

Student of technology or engineering (mechanical, electrical, physics, computer)
- Proven: experience with Rasberry Pi hardware and software (Raspbian OS)
- Proven: experience with DC stepper motor controllers
- Proven: experience with programming in Python or another common language
- Ideally: experience with programming a user interface to display and change settings
- Ideally: experience with mechanical construction, in particular: small scissor platform
- Ideally: experience with electrical construction of a handheld switch for controlling the motor
- Ideally: experience with serial readout of sensors, in particular: a postal weighing scale
- Able to work in a team, verbally present ideas & results and write a comprehensive report

Scope

Suitable as an internship or Master thesis-project of a minimum of 12 weeks (can be extended to include more tasks up to a project of 30 weeks)

Contact

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