

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

Mammography research setup – new type of contact area sensor

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 current capacitance-based Sigmascreening contact area sensor will be replaced with a different type of contact area sensor. The high-level readout and data processing of this type of sensor needs to be implemented to obtain an output related to the contact pressure on the breast. The research unit with new contact area sensor will be used on (silicone) breast phantoms to determine the sensor precision and accuracy and to test that everything functions safely.

Profile

Student of technology or engineering (electrical, physics, computer)

- Proven: experience with (serial) readout of sensors
- Proven: experience with programming in Python or another common language
- Ideally: experience with light image processing
- Ideally: experience with programming a user interface to display and change settings
- Ideally: experience with Raspberry Pi hardware and software (Raspbian OS)
- 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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