



SEGMENTATION OF MIDDLE EAR STRUCTURES IN OCT IMAGES

Acoustic Insight is a Dutch MedTech start-up developing an innovative imaging platform for ear specialists. We're based in the inspiring start-up environment of YES!Delft.

**Do you have a special interest in medical optics and signal processing?
As a student you can make a real contribution to improving ear care.
Just join our team!**

Every year, 200.000 patients in the Netherlands visit an ear specialist with middle ear problems. Ear specialists often miss relevant information to understand why the middle ear doesn't work properly simply because they can't see the relevant structures behind the ear drum. Acoustic Insight develops Aurisvue, a new medical device based on **optical coherence tomography (OCT)** that cannot only visualize these structures but also measure the mobility of the hearing bones. With Aurisvue, medical professionals can provide the best ear care and improve the quality of life of patients with middle ear problems. The first clinical investigation is planned to start in summer 2022 at the Erasmus MC in Rotterdam.

The project

OCT provides depth-resolved imaging of semi-transparent tissue. It is an interferometric method with very high sensitivity and resolution. OCT produces A-lines (depth measurements at a single), which are combined into cross-sectional images by lateral scanning; volume scans result from adding another scanning direction (see Figure 1).

While these images can readily be interpreted qualitatively by physicians, further processing is warranted to focus on certain clinical features and to produce quantifiable information, such as the thickness of the tympanic membrane (trommelvlies) or the size of the ossicles (gehoorbeentjes). In this project, you will work on the development of segmentation methods of (two-dimensional and three-dimensional) OCT scans of the middle ear. The algorithms will be evaluated on scans of normal and pathological middle ears.

We are looking for enthusiastic and motivated BSc/MSc students that have:

- an interest in optics and signal processing;
- some programming experience (preferably Python); and
- a strong interest in medical applications.

At Acoustic Insight, we value initiative and look forward to adapt the project to your specific interests and knowledge. Contact us for more information!

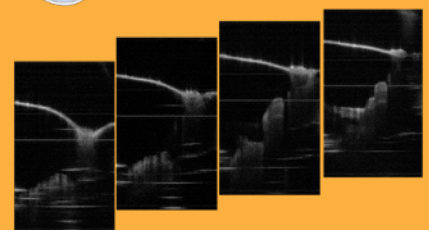


Figure 1. Serie of B-scans of a normal middle ear.

Curious for more information?

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