Master’s thesis project: Building an artificial head for bone conduction testing – biomedical & sound.

Background
Bone conduction has been around for many decades and the technology was matured in the early days at Chalmers. This technology today helps hundreds of thousands of people to hear every day. When measuring bone conduction output the standard has for long been a "Skull Simulator" which is a bench measurement interface. When hearing implant devices have developed over the years, more technology is moved under the skin of the patient and the need of a more sophisticated measurement interface has emerged.

Aim
The purpose of this thesis work is to prototype and build an anatomically correct head and test different parameters which affects bone conduction. Human skull and soft tissue properties needs to be understood. The aim is to take that knowledge and apply it to a design of an artificial head.

Preconditions
Knowledge regarding technical issues and requirements sits with Cochlear, background data and literature research has been carried out in a previous master thesis. Student background in life science or mechanical engineering or sound and vibration or material science or prototype manufacturing or modelling or testing are good as a technical background. Knowledge about material properties, mechanical impedance, general experimentation and testing are welcomed. You should be able to understand bone conduction on a high level i.e. no detailed pre-knowledge required.

Results
The expected result should be some physical builds of parts or the whole artificial head and testing against human skull properties. Thesis report written. Reward 20 000 SEK for completed work.

Number of students
We recommend two students for this project but that is not a requirement.

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