1x Scholarship for a MSc Degree by Research

Project title: "Investigating the impact of hearing-aid processing strategies on hierarchical speech processing"
Main PI: Giovanni Di Liberto, Assistant Professor, School of Computer Science and Statistics, TCD (https://www.diliberg.net/)
Academic partner: Alejandro Lopez Valdes, Assistant Professor, Department of Electronic and Electrical Engineering and Global Brain Health Institute, TCD
Industrial partner: Emina Alickovic, Research Engineer at Eriksholm Research Centre, Oticon A/S, Denmark, and Adjunct Professor at the Department of Electrical Engineering, Linkoping University, Sweden
Funded by: William Demant Foundation. Funding is available for EU-candidates only for this particular project.

Project summary: Speech communication is impaired in individuals with hearing deficits. While hearing-aids can restore the ability to comprehend speech, their positive impact is greatly reduced in noisy multi-talker environments. To tackle this challenge, modern hearing-aids adopt amplification and noise reduction strategies that can increase comprehension in such real-life listening scenarios. However, the precise impact of those strategies on speech comprehension remains unclear, making the choice of the hearing-aid strategies and their parameter tuning challenging. One solution may be provided by the recent finding that neural signals recorded non-invasively with electroencephalography (EEG) during natural speech listening can be used to derive robust objective indices reflecting neural linguistic encoding. In this project, we aim to use such objective neural indices to determine the effect of hearing-aid strategies on the hierarchical processing of speech. In addition to providing us with novel important insights into the effect of hearing-aid strategies on the neural processing of speech, the natural speech listening task is suitable for the simplified identification of the optimal hearing-aid strategy in individual users. As such, this project will test the possibility of using EEG for the accurate and rapid tuning of hearing-aid devices.

We are looking for candidates with:
- Strong computational and signal processing skills
- Strong interest in studying cognition and the human brain
- (Ideally) Prior experience with speech sound processing

Interested candidates should submit a CV and a brief cover letter, explaining in about 100-200 words their motivation in applying for this position. Please contact Dr Di Liberto (diliberg@tcd.ie) or Dr Lopez Valdes (lopezvaa@tcd.ie) if you are interested in the position.

The deadline for submitting applications is 11/07/2021, and shortlisting and interviews will take place shortly after that. The successful candidate will start the MSc by Research on the 1st September 2021.