



Music In the Brain

Guest Talk



Date: Friday April 11th, 2014

Time: 11.00-12.00

Place: Meeting room, 4th floor, building 10G, AUH, Nørrebrogade

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Improving music perception for people with cochlear implants

Cochlear implants (CIs) improve hearing for people with different degrees of hearing loss. In some situations, however, CI-users are at a significant disadvantage compared to normal-hearing (NH) people. Particularly, most CI-users have difficulty appreciating aspects of music such as pitch and music produced by multiple instruments. In this seminar, I will present some research projects conducted within the Bionics Institute of Australia dedicated to improve music perception in CIs.

1] Music composed for cochlear implant recipients

Six contemporary Australian composers were commissioned to create a series of six new musical works specially designed for music lovers who have impaired hearing. CI users and NH listeners rated many of the 16 items similarly. However, CI users gave lower ratings than NH listeners for understanding, and instrument localization and identification.

2] Enhancing auditory streaming cues

People with impaired hearing have reduced abilities for auditory stream segregation compared to people with normal hearing. We are studying the cues used by people with normal and impaired hearing in order to provide cochlear implant and hearing-aid users with enhanced signals which will improve their ability to separate sounds that occur simultaneously but come from different sources. This will enable better perception of polyphonic music.

3] Interactions between speech and music

In the CI, pitch is mainly conveyed through the place of the electrodes: i.e. the deeper the electrode, the lower the pitch. However, the position of the electrode is also the main cue for the formant position of each vowel. Therefore, we hypothesised that 1] the presence of speech in sung words has a negative effect on melody recognition compared to the recognition of a melody consisting of piano notes and 2] changes of pitch in sung words have a negative effect on the perception of language compared to the perception of language in spoken words. Results of our psychoacoustics experiments supported only the first hypothesis. These results showed that music can be affected by speech, but the inverse is untrue.

ALL ARE WELCOME

For more information
about the guest talk,
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Dr Jeremy Marozeau is a Research Fellow at the Bionics Institute in East Melbourne, AUSTRALIA. His research is focusing on the perception of music and voice pitch information for people with a cochlear implant. He received his doctorate from the University of Paris-VI. His dissertation was on the effect of the fundamental frequency on timbre. He did his PhD at the Institute for Music/Acoustic Research and Coordination (IRCAM, Paris) and at the Center for New Music and Audio Technologies (CNMAT) of U.C. Berkeley.