PAUL MAGRON

From France to Finland

Project: **Leveraging ambient sound analysis in speech processing for hearing aids**

Research topic: **Engineering**

Finnish Institution: **Tampere University**

French Institution: **University of Toulouse, CNRS**

Dates of mobility: **26/02/2020** to **08/03/2020**

Program: **Maupertuis Programme**

PRESENTATION

Paul Magron received the State Engineering degree from the École des Ponts ParisTech, France, in 2013, the M.Sc. degree in acoustics, signal processing and computer science applied to music (ATIAM) from the Université Pierre et Marie Curie (Paris VI), France, in 2013, and the Ph.D. degree from Télécom ParisTech, France, in 2016, in the field of signal processing. From 2017 to 2019 he has worked as a postdoctoral researcher within the Laboratory of Signal Processing, Tampere University, Finland. From 2019 to 2021 he has worked as a postdoctoral researcher within the Signal and Communications team, wich is part of IRIT in Toulouse, France. Since October 2021 he is a tenured research scientist within the project-team MULTISPEECH which is part of LORIA in Nancy, France. His research is devoted to audio signal processing and machine learning, with a strong emphasis on speech and music applications such as speech enhancement, music demixing, audio restoration, and music recommendation. His methodological interests include phase recovery, nonnegative matrix factorization, probabilistic modeling, and deep neural networks.

ACTIVITIES IN FINLAND

Paul Magron's project aimed at advancing towards real-life signal enhancement, in order to cope with the diversity or noises and acoustic conditions. The visit at Tampere University was the opportunity to lay down the foundations of the project, which lies at the crossroads of signal processing and deep learning on the one hand, and speech processing and ambient sound analysis on the other hand. With Tuomas Virtanen, they identified three promising research directions: I) designing novel neural architectures with two-headed systems that can jointly perform signal enhancement and acoustic event recognition; ii) advancing strong labelling of ambient sound datasets in order to overcome the limitation of weakly-labelled sets; and iii) adaptation to unseen conditions, which can be conducted through leveraging recent advances in the theory of optimal transport applied to machine learning.