Foreword

Welcome to the first issue of the SONICOM newsletter, a biannual bulletin that will share updates from our project over the next 5 years. We were delighted when SONICOM was awarded funding from the European Commission under the FET Proactive scheme earlier last year and are excited to share our journey with you as research progresses.

In this issue we'll be introducing all things SONICOM, from sharing our mission and getting acquainted with our partners, to celebrating our first published papers and looking ahead to the research work still to come.

As always we want to hear from you, so join the SONICOM conversation by following us on Twitter @SONICOMproject, checking out our website www.sonicom.eu, and subscribing to this newsletter.

Dr Lorenzo Picinali
SONICOM coordinator and on behalf of the SONICOM consortium

In this issue

SONICOM's inaugural meeting

SONICOM officially kicked off with the inaugural annual meeting on 20 May. With representatives from all partners present, the meeting provided a fruitful basis for discussions on delivering the project's pioneering objectives over the next 5 years. Read a summary of the meeting highlights.

Vacancies

Research Associate in Machine Learning-Based Spatial Audio
Imperial College (UK)
Full-time, fixed term
Applications close September 20th 2021

Post-doc Position
ÖAW (Austria)
Full-time, fixed-term
First round of reviews in September 2021

PhD Student Position
ÖAW (Austria)
Part-time, fixed-term
First round of reviews in September 2021

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 848196

OUR MISSION

Funded under the EU Horizon 2020 Future and Emerging Technologies (FET) Proactive call to boost emerging technologies, SONICOM is a 5-year research project that aims to revolutionise the way we interact socially within AR/VR environments and applications.

Immersive audio is our everyday experience of being able to hear and interact with sounds around us. Simulating spatially located sounds in virtual or augmented reality (VR/AR) must be done in a unique way for each person and currently requires expensive, time-consuming individual measurements, making it commercially unfeasible.

Our research will leverage Artificial Intelligence (AI) to design a new generation of immersive audio technologies and techniques, specifically looking at personalisation and customisation of audio rendering. Using a data-driven approach we will explore, map, and model how the physical characteristics of spatialised auditory stimuli can influence observable behavioural, physiological, kinematic, and psychophysical reactions of listeners within social interaction scenarios.

Read more about SONICOM's commencement.

NEW HARDWARE

HRTF measurement setup

We are building a sophisticated new SONICOM lab at Imperial College where individuals will be able to walk in and have their head-related transfer function (HRTF) measured.

Photos to come in our next issue!

Cross-partner collaborations

with SECT

SONICOM is part of a cross-collaboration initiative with three other research projects funded within the FET Proactive Emerging Paradigms and Communities call, subtopic A: Artificial Intelligence for extended social interaction.

The cross-collaboration brings SONICOM together with CAROUSEL+, EXPERIENCE, and TOUCHLESS (SECT) to examine interaction technologies to enhance the social dimension for future virtual social spaces.

CAROUSEL+ aims to develop further understanding of human body language and the capability to interact autonomously with a group of people.

EXPERIENCE is developing a ready- and simple-to-use hardware and software technology allowing everyone to generate their own VR environment.

TOUCHLESS proposes innovation in haptic technologies used in virtual social interactions which could be beneficial to those who cannot fulfil their need for touch

Find out more about our collaborative partners.

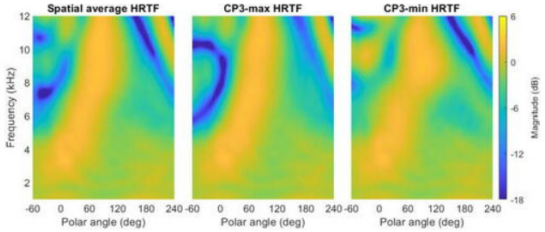
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 848196

PUBLISHED WORK

Another parametric pinna model

To be presented at the I3DA conference

When trying to create immersive personalised audio playback using headphones, we need to consider how the listener's head, torso and ears create personal acoustic filtering of the sound. The individual shape of the ear is especially crucial when it comes to personalising binaural audio, as it has a complex geometry and requires a sophisticated 3D representation. To simplify that 3D representation, Katharina Pollack and Piotr Majdak from the Acoustic Research Institute of the Austrian Academy of Sciences have developed a parametric pinna model (PPM), which enables representation and modification of ear-shape geometry using only a few parameters.



What are the contributions of pinna morphology to the HRTF?

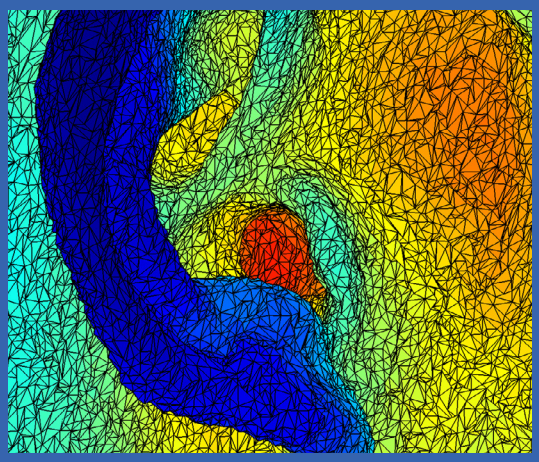
DOI: 10.1121/10.0004128. By Brian F G Katz and Peter Stitt.

A basic element for creating convincing 3D audio in VR is the head-related transfer function (HRTF), which maps the acoustic path from a sound in space to a listener's ears. The HRTF is highly dependent on direction, arising from the very personal/individual shape of the pinna (or outer ear), producing complex reflections and resonances. In this study, a novel parametric 3D ear model was developed to investigate methodical changes in pinna shape, with a view to identifying important contributing parameters.

Upcoming work

Binaural reverb perception and computational efficiency in AR

In augmented reality (AR) you can see and hear virtual objects around you. For an immersive experience, the AR system must sense the room and simulate its acoustic features so that the virtual objects sounds like they are next to you. In our upcoming research study, we are investigating how to do this efficiently and effectively, understanding from human perception and employing models as well as AI.



SONICOM Sentences dataset

To assess the quality of different immersive audio rendering elements in VR/AR interactions it is essential to perform listening tasks where participants are exposed to immersive audio simulations while being observed and measured. To conduct such tasks, a collection of high-quality speech signals are needed, and therefore attention to the quality of the recorded speech is essential. For this reason, Imperial College London and the University of Glasgow have started to collect a English speech recordings that can be used to generate immersive audio simulations in future auditory experiments. The collection will be shared initially across members of the SONICOM consortium, and later with the wider research community.

Never miss a beat

Follow us by...

If you haven't already, be sure to sign up to this newsletter and please share this link with anyone who might be interested!

Join the conversation on twitter @SONICOMproject

Read all about it on our website www.sonicom.eu

Follow our ResearchGate

CONNECT WITH US

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 848196