ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Distributed Computing

Prof. R. Wattenhofer

BA/MA/SA/Group/Lab:

Android Audio Beamforming

Making a conference call can be annoying because noise can make it hard to understand the people on the other end. This is especially true when using bad microphones in noisy environments. By using beamforming, audio originating from one direction can be amplified. With this method the quality of the recorded audio can be improved. However, this method requires the combination of multiple recordings from multiple microphones. Since the number of microphones is very limited on modern smartphones, we want to use multiple phones which collaborate in solving this task. Implementing this on regular smartphones is quite difficult because usually the operating systems introduce random delays that make clock synchronization and synchronous recording difficult.

Solving these issues also opens up other application scenarios. By distinguishing audio coming from different directions, it is also possible to distinguish speakers. This could be used to analyse the dynamics of conversations. Maybe it is even possible to deduce the locations of the other phones and sound sources?

Implementing such a system with smartphones, for example, could improve call quality in any location. Since most people carry their smartphone all the time, no additional hardware is needed.

We do have ideas on how to solve the technical issues. Also we do have a few application scenarios for the resulting system. However, you are welcome to propose your own!

Requirements: During your thesis, you will meet on a weekly basis with your advisor(s), to discuss progress and open questions. In this thesis you will write code for Android. The student(s) should be able to work independently on this topic!

Interested? Please contact us for more details!

Contacts

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