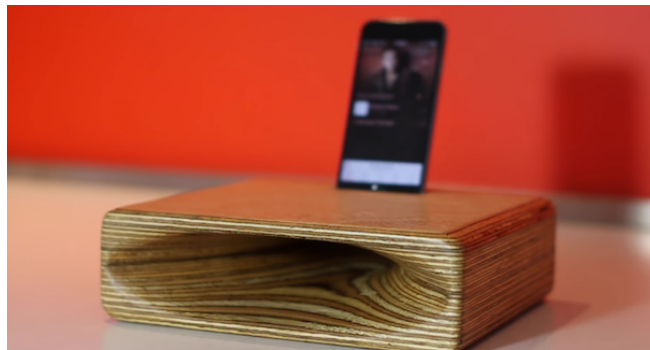




## Ambient Noise Audio Communication

Most people carry their smartphones in their pockets wherever they go. These smartphones come equipped with speakers and microphones. There is a potential in exploiting these components to transfer data between devices. This could be used to share a link with everyone in the room or maybe to chat with people on the same train. In these situations it would be useful to have an easy way to communicate between closeby smartphones. Other existing technologies such as NFC, Bluetooth and Wifi also allow local communication, but often are not available on all devices or require setup by the users.

Ultrasonic signals can be used to transmit data without disturbing the users. However the speakers and microphones in smartphones are not optimized for this frequency range and therefore only achieve communication over short distance. In a previous project a method has been developed for hiding data in music in the audible frequency range. In this setup the data is transmitted by the same speaker that plays the music.



In this project we want to embed data in existing background music. Therefore, the ambient sound has to be analyzed in real time and then the data can be transmitted by the smartphone speaker. The existing method could also be extended to work better with other sounds than music, e.g. speech and environment noise.

**Requirements:** Programming experience is an advantage. There will be weekly meetings with your supervisors to discuss the progress and open questions.

**Interested? Please contact us for more details!**

### Contacts

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