EPFL

■ **CHILI**
computer-human interaction
in learning and instruction

LEARN
Center for Learning Sciences

Spring Semester 2021   Research Project: CoWriter / iReCHeCk

Help the Reachy robot become social !

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MOTIVATION

The project aims at extending Reachy's Human-Robot interactions functionalities related to audio processing, verbal interaction and natural language understanding.
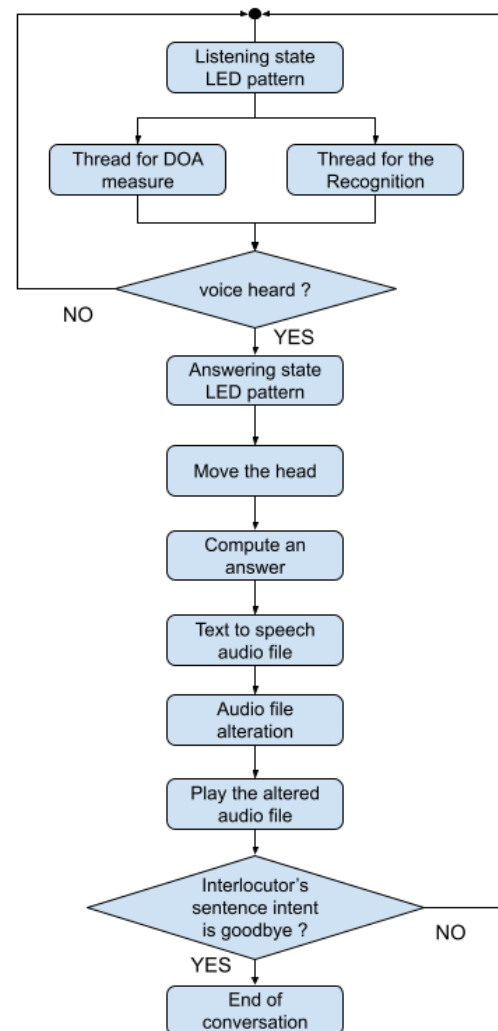
METHODS

We allow Reachy to do a simple conversation with its interlocutor. To make it speak, we use text to speech services. Additionally, a synthesizer has been created to make its voice more robotic sounding. To allow Reachy to understand what the interlocutor is saying, we use speech recognition. Then, to allow Reachy to provide a coherent answer to its interlocutor, we use a neural network inspired from simple chatbots. Finally, other functionalities have been implemented to exploit Reachy's embodiment and to enhance the verbal interaction. Among them, there are for example the orientation of Reachy's head toward its interlocutor using sound localization or the LEDs management to indicate Reachy's current state (Listening / Answering).

RESULTS

The overall result is satisfying: Reachy is able to do a simple conversation with its human interlocutor. However this interaction is also not perfect. Certain stages of the interaction do not always work such as the speech recognition or the orientation toward Reachy's interlocutor, even if these features were made to be as robust as possible. A work that remains would be to mitigate this kind of defaults.

Algorigramme of the verbal interaction

Link to the code repo and report:

https://c4science.ch/source/reachy_repo/browse/master/ReachyAudio/