ALGOSUP 2022 Project 5 B Functional specifications

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Stakeholders

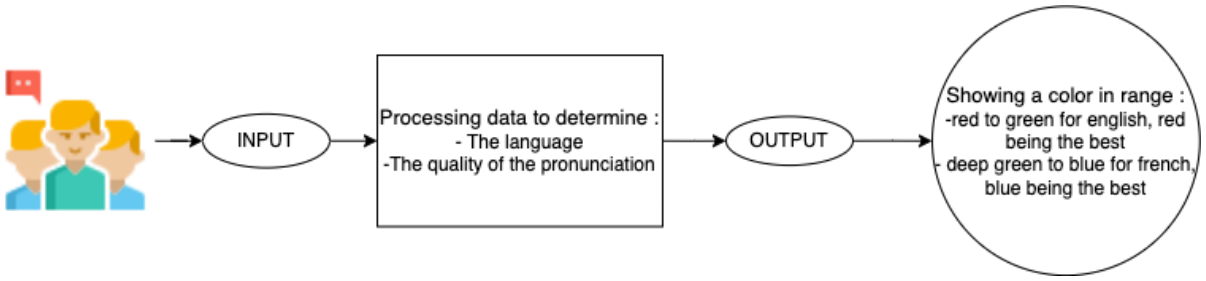
Quentin, Thomas, Leo, Clementine, Max, Louis, Franck Jeannin, Jackie Boscher

Project and scope

The goal of the project is to build a device that can listen to conversations (in project rooms for instance) and detect when English is spoken or when French is spoken. The device could emit a sound or display different colours based on the language. In a more advanced version, it could also detect the fluency in the spoken language.

Use cases

Jacques created a new english school , Jacques wants all the students to speak in english but some are talking in french like Quentin a young boy who has some problem adapting to the school.
Thanks to the AlgoB listener Quentin will know when he talks in French, a small LED will indicate if he is using French or English as well as the level of mastery he is showing in this language.



Using this device continuously will help to improve his english level in the long term in a friendly manner.
Quentin does not wish to see his data on the web, thankfully the small device shows when he is on with a small light. The device does not connect to the web so that no data may be stolen.

Requirements specs

The device should be able to:

- take sound as an input
- Process the sound and search for voices
- Find the language in which the user talked (french or english)
- Return a colour showing what language you are speaking and your mastery of it.

Risks and assumptions

Risk #1 :

Problems between windows and mac with tensorflow requirements, the requirements written on tensorflow's website are a bit different

Risk #2:

Hardware problems, The hardware will be used at the end of the project which shows a potential risk of last minute material problems.

Risk #3:

Privacy leak, as that we are listening continuously to the surroundings, we have to make sure that no data may leak to the outside

Solution overview

A problem that will immediately appear is the lack of data, to resolve it a few possibilities exist, we could either take data from a web source like mozilla sounds (https://commonvoice.mozilla.org/en/datasets) or record our voices in french and in english during the whole project.

Concerning Hardware, a check every day would reduce the danger of failing material. In case it does happen, we would immediately write it a report we would send to the school.

Finally, the biggest problem is privacy, we need to be sure no data will leak. To resolve this issue a way would be to train the neural network model and download all the neural network locally so that we could later use it offline in the final model. An update of the code every month to override the old one would be a good way of making sure no one accessed it to add his own code.