

## TP-BE Integration "Advanced Interaction" Minor

*"Luc Julia, a French specialist in artificial intelligence known in particular for having co-created Siri before its takeover by Apple, has become scientific director at Renault. The researcher, who has also worked on the IoT issue at Samsung, will help the carmaker deploy its innovation roadmap around AI, human-machine interfaces and connectivity."<sup>1</sup>*

**In this context, the 2021-2022 integration project aims to develop PoCs (Proof of Concept) of intelligent assistants dedicated to multimodal interaction with drivers and/or passengers of future vehicles.**

### Organisation

You will be organised into 3 teams of 6 to develop :

**Team 1:** an assistant dedicated to helping manage events such as the reception of SMS (SMS reading mode chosen by the user), the making or reminder of appointments. These events could be scheduled events (appointment reminders, additions, deletions, etc.) or asynchronous events (SMS reception notifications, emails, answering machine messages, etc.).

**Team 2:** an assistant dedicated to the management of an intelligent home in its home automation (heating, blinds, etc.), domestic (shopping list, etc.) and family aspects (leaving a message for family members: go get bread, etc.).

**Team 3:** an assistant dedicated to urban mobility in order to help users in their travels on the aspects of travel (going from point A to B, route suggestions, ...), transport modalities (tram, bus, metro, bike, possible combinations, ...), transport information (interrupted line, possible delay), available parking (location, distance), weather information (impending storm), ...

### Technical constraints:

- The voice modality will be implemented via the use of a connected speaker provided (Alexa, Google Home, ...) or voice API on a computer;
- the conversational part will be managed through the RASA platform;
- the assistant will connect to existing web services via the available APIs (Tisséo, Weather, Agenda, etc.) or simulated services (hard database)
- a connection will also be made via tools such as Messenger, WhatsApp, Discord, ... a local wifi terminal will be available at the AIP.

### Users / Public concerned

A focus on accessibility will be essential. Communication methods should be adapted to the user's situation: active driver (= vehicle in motion), stationary driver (= no active driving, vehicle at a standstill), and possibly passenger. Disabled driver (e.g. wheelchair user).

---

<sup>1</sup> <https://www.usine-digitale.fr/article/le-specialiste-de-l-intelligence-artificielle-luc-julia-est-nomme-directeur-scientifique-chez-renault.N1085564>

Depending on the type of task carried out, the confidentiality of the information can be controlled by the user (choice to have the SMS read or not, for example).

**Language** : develop an application in French and/or in English

### **Interaction Modalities:**

Several modalities will be possible (voice, visual, written, etc.). You will take into account the possibility of combining them or substituting one for the other depending on needs (driving situation or not), relevance, etc.

### **Conception and development steps**

#### **Step 1**

Used tool : **RASA (version 2)**

For the different tasks :

- - Modeling the conversations (preparatory work to be effective in the session)
- - Designing the chatbot
- - Testing and evaluating the chatbot

#### **Step 2**

Integrate the chatbot in one of the applicative environments like :

- Discord / Messenger / Whatsapp / ...
- Site web via API to access information

#### **Step 3**

Integrate the voice modality according to the situation (in case of driving, no visual or written modality, ...). Each group will have a different speaker, to test different technologies. (voice recognition, TTS, ...)

### **Schedule and Work to do**

- Project presentation 29/11/2021
- Development during week 1 (3-7 January 2021)
- Demonstration/validation session Friday 14/01/2022 1-4pm
- A report due by Friday 21/01/2022
  - o Overall design and architecture
  - o Accessibility treatment (focus, approach, ...)
  - o Evaluation of the chatbot (performance and ergonomics)

### **Links**

- Rasa - <https://rasa.com/docs/rasa/installation>
- Rasa API - <https://rasa.com/docs/rasa/pages/http-api>
- Discord bot in Python - <https://realpython.com/how-to-make-a-discord-bot-python>
- ...