

## **Title: A Chatbot that is able to learn new skills without the intervention of a developer:**

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### **Description:**

During the last few years, chatbots have become more and more sophisticated and complex. They already provide basic assistance to humans on different online platforms but also in other places. The vast majority of chatbots have been designed to excel in a well-defined use case (with well-defined functionalities), such as in providing customer assistance or in offering basic information on a requested topic. Any extension of those chatbots requires the intervention of a developer. The purpose of this project is the development of a chatbot which can extend its knowledge by learning from users or even automatically.

To clarify the idea let's consider a scenario in which a user is asking from the bot about the weather in a specific city. If the bot will recognize the city a request will be sent to the weather service and the user will obtain the information that he/she needs. However, if the bot will not recognize the city, an error message will be displayed. In this last case, instead of the error message, the bot should verify from the user if he/she provided the city name, obtain the confirmation from the user (together with the country/region names), will add the city to his knowledge and then it will send a request to the weather service and the user will obtain the information that he/she needs if that service know the city, if not the bot will get the cities that the service know in the specific country/region, then ask the user to choose from those cities, the city that is nearest the desired city. The bot will learn the association between those 2 cities and it will inform the user about the weather of the selected cities. In future interactions, the bot will benefit from the learned knowledge and answer the request directly. For those cases the user will be able to rate the bots' answers.

## **Title: Chatbots collaboration:**

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The vast majority of chatbots have been designed to excel in a well-defined use case, with well-defined functionalities. The purpose of this project is the development of a chatbot that can recognize different topics/intents, then, according to the recognized topic/intent, it communicates with another chatbot (that has knowledge over that topic/intent) to pass the request of the user and to get the answer, the finally the bot will provide the obtained answer to the user. To validate this project, multiple chatbots should be developed together with the main chatbot, each specialized on a specific topic/intent.

## **Title: Chatbots - A Way to Motivate Behavior Change:**

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In everyday life, each person takes a significant number of decisions (e.g. the decisions on what to buy in a supermarket, what to eat, what to drink, what to wear and what transport way to use). Some of those decisions may affect the current life of the person, his/her future but also the future of his/her family and even mankind.

With an expanding access of decision supporting technologies sustainable development with the help of modern interfaces has become a subject for discussion.

The purpose of this project is the development of a chatbot that will help people to rethink the decisions that they are tacking, by providing feedback for the user regarding the decision that he/she took, it consequences and a better alternative.

## **Title: Emotion Recognition for Robots:**

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Social Robotics is currently a very active research field. In this field, the ability of a robot to recognize the emotions of the user and to act according to those emotions will represent a key factor for the success of the social robot.

Knowing the emotional status of the user will not only allows a robot to make the discussion between the user and the robot more natural from the user perspective (e.g. giving the possibility to the robot to change the tonality of the voice) but also to act in a manner that suite better the current emotional status of the user.

The emotion of the user can be identified from several factors, two of those factors being the voice and the facial expression of the user.

The purpose of this project is the development of a solution that will enable a robot (Pepper and/or TIAGo) to detect in real time the emotion of the user based mainly on the voice of the user (depending on the case facial expression can be also used).