DEVELOPING AN EXPERT SYSTEM

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Language is important to communicate with another human being in any way that they both can understand each other. Being tolerant does not only mean that you have to accept others but also give a chance to interact with minorities in a society. We all know a few phrases from foreign languages that we don't speak, just imagine learning a few expressions from the sign language. Mika chatbot is exactly designed for that, it teaches you fingerspelling for a basic communication with a disabled person.

The Artificial Intelligence (AI) field was founded at Dartmouth Conference in 1956, but it became well known to the public over the past five to ten years. AI permanently interrupts some industries these now can be replaced by AI and people should adapt to the environment and professional life in the future. In the last decade, the interest in the results of research in the AI field has increased to an even greater extent. In particular, the sphere of knowledge-based systems, one of the first areas of artificial intelligence that is commercially fruitful, has received special attention. From these knowledge-based systems, expert systems have been the most successful at present. [1]

The sign language is unique in many ways. First of all, it is a cultural foundation for a small but important culture, the deaf. Deaf people who use sign language as primary communication are not primarily people with disabilities, but people who have used their separation from normative culture as an opportunity to create a unique way to look at the world. Learning Sign Language can not only help communicate with deaf and dumb people, but can equip you with valuable long-term skills [2]. The benefits of spreading Sign Language learning to more

Fig.1

people will make it known, bringing a lot of help to the deaf community. American sign language gestures can be seen in Figure 1.

A chatbot is often described as one of the most advanced and promising expressions of interaction between people and cars. However, from a technological point of view, a chatbot represents only the natural evolution of a natural language processing (NLP) system. The first and probably the simplest bot is rule-based chatbot. These bots are the most common and many of us probably have been interacting with one, either via live chat, on ecommerce sites, or through social networks. Rule-based chatbots are able to hold basic conversations using something called "if / then" logic [3].

In contrast to simple response systems, Chatbots uses the power of IA to learn from human conversations to learn how to respond in addition to understanding the user's intention and analyzing the context of the conversation to respond correctly to the user. [4] In order for the MIKA chatbot to simulate a human conversation, it needs a great base of knowledge and lifelong learning.

Expert systems are programs that answer questions and solve problems in a specific area. The methodology for creating an AI expert system is based on the components: knowledge base, inference engine, and user interface, as seen in Figure 2.

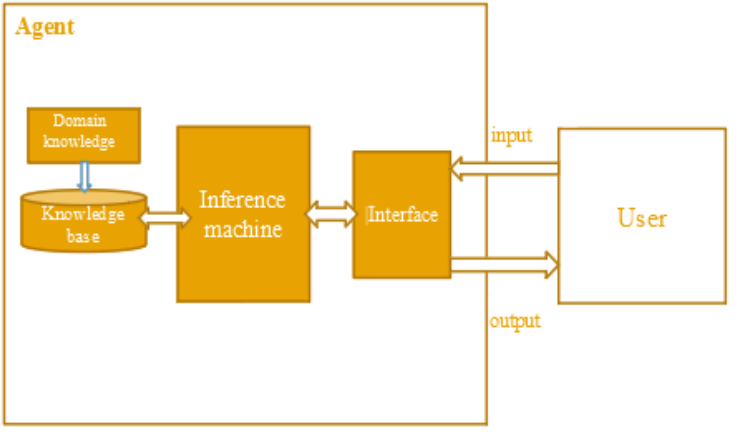

Fig. 2

Firstly, the knowledge base provides the initial facts for the system by collecting the data for which the target response is already known, then converting the variables to make them more meaningful and to divide them into training and assessment data. Populating the knowledge base with more daily expressions in conversation will make it look like a human-like dialogue. In order to maintain the interest of users it is necessary to provide an interactive learning method, design and a way of remuneration.

Second, the inference engine helps enrich these rules/facts while interacting with the user [5]. The inference mechanism provides a methodology for understanding knowledge base knowledge. Its purpose is to present a recommendation and, in order to do so, combine the facts of a particular case (input data) with the knowledge base of the knowledge base.

Finally, the user interface is a must, as most users are not experts in the field. The application provides a platform that is easy to understand and available to the public. MIKA being a web application, has the backend written on Java and Spring framework with knowledge base in Drools [6], while the front end is in the Vaadin framework [7]. The reactor being a reactive library for building non-blocking applications provides the interaction of reactive streams and, in conjunction with other open source tools and methods, provides a pleasant interaction experience with the application. The result of my work can be seen in Figure 3.

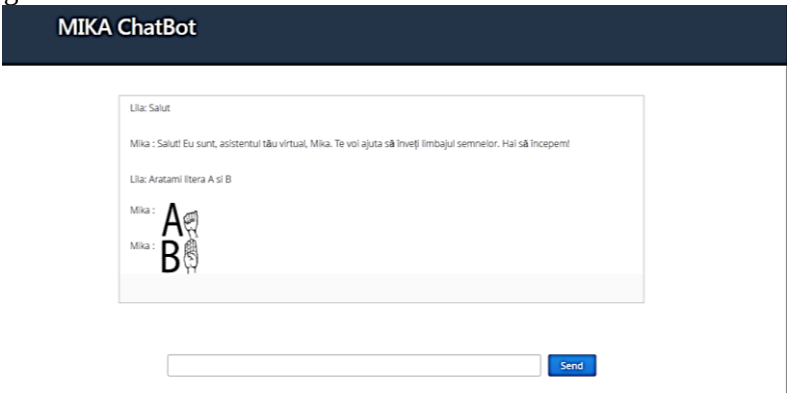

Fig. 3.

Conclusion

Perfecting the project brings important social benefits for a technologically tolerant society and facilitating the communication of people with disabilities through an interactive system. Moreover, this system offers another opportunity to learn sign language. For instance, the user interaction perspective with new gadgets and technologies comes up without the need to switch buttons or use the remote control. In a perpetual cognitive social progress, the system implies an independent learning aspect of learning by collecting data with adaptation to external environment reactions. The project requires continuous development, as in the prototype given, learning the alphabet in a chat group and fingerspelling the words. The following prototypes will facilitate the learning of words and phrases specific to a language, and also the learning of different sign languages.

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