

# EMPATHY IN CONVERSATIONAL AGENTS

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The last five years have seen major advances in the field of image processing using neural networks, which has then led to tremendous progress in the area of language processing. This has enabled the creation of increasingly sophisticated conversational agents.

Conversational agents, or chatbots, are finding applications in customer services and health services, as daily coaches or as digital companions. It is critical to grasp emotions in these situations, where humans are accustomed to conversing with other humans. Talking with empathy is the key to the mass adoption of such systems. However, it is where the real challenges arise.

In this thesis, we analyse how previous conversational agents are evaluated in order to extract trends and good practices in this domain. Once the basis is established, we leverage advances in natural language processing to build emotional then empathic dialogue systems that can generate convincingly human and empathic responses to text-based messages.

After defining a chatbot evaluation model, two chatbot experiments with user evaluations were conducted. An emotion detection model, and an emotional paraphrasing model were then created. This led to the largest experiment of the thesis, which is the implementation and assessment of the empathic model and the model for predicting the user's emotional response. The various prototypes and evaluations have validated the models presented and the approach proposed in this thesis.

The work proposed in this thesis could be used to improve chatbots in the fields of customer service and healthcare, but more generally in any other field where a little empathy leads to an improved experience for the end user.

The different results have been published and presented in national and international scientific conferences in the fields of affective computing, conversational agents or artificial intelligence.

## Jury:

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