Presentation

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PLACAT: A User-friendly Question Answering System for Smart Speaker Devices

Abstract:
The goal of the PLACAT project is to combine the conversational capacities of chatbots, which can be trained on large amounts of non-directed dialogue, with the question answering (QA) capability of dedicated systems. The result is demonstrated as a virtual assistant on a commercial smart speaker, using its automatic speech recognition capabilities. The virtual assistant includes three key technical components, two from the state of the art and one innovative.
The key innovation is a dialogue controller that directs input utterances, depending on their recognized dialogue act, either to a robust chatbot (if the utterance is labeled as interaction-related, such as greetings or chit-chat) or to a powerful question answering system (if the utterance is recognized as a request for information). The controller is a classifier trained on a database composed of questions from chat corpora and from QA ones. The chatbot uses recent models based on reinforcement learning trained on chat corpora, while the QA system uses the recent BERT representations of words in context (from a Transformer neural network) trained on a large QA database (SQuAD).
The demonstrator uses the Google Home speaker. It forwards spoken actions to the controller on the DialogFlow platform, which then connects to our servers for each of the dialogue components. The PLACAT platform is intended as a showcase for the development of commercial virtual assistants endowed with a strong capacity for question answering, particularly over corporate documents such as technical manuals, but at the same time able to sustain user-friendly conversations.

Biography: Gabriel Luthier is a research assistant at HEIG-VD / HES-SO and the main developer for the PLACAT project. In his BSc thesis, he designed a dialogue chatbot for a major tourism office. Andrei Popescu-Belis is a professor at HEIG-VD / HES-SO, a lecturer at EPFL, and a researcher in human language technology, specializing in machine translation and information retrieval. He has published over 150 refereed papers in the field.

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