Contextual Slot Filling for Task-Oriented Conversational Agents
E.C. Stammes

Abstract

Slot filling aims to extract the relevant values of certain types of slots from a given utterance in a dialogue. Previous research has either used probabilistic models, requiring little data and having an explicit feature extraction step, or neural networks, using vector representations of words and achieving state-of-the-art results. In this thesis, this problem is solved by using a neural model with two specific properties: (1) a memory component, giving the model unrestricted access to previous utterances, effectively adding context to the current input utterance. (2) an explicit feature extraction step that uses the dialogue acts as features. The resulting model and two baseline methods are evaluated on a multi-turn dialogue dataset, outperforming both by using the benefits of both probabilistic models and neural networks. The model requires little data and uses an explicit feature extraction step, a memory component and word embeddings. It performs significantly better than the baselines on smaller dataset sizes, allowing the model to be used in practice when building task-oriented conversational agents.