Title: Goal Oriented and Open Domain Dialogue Management

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Abstract:

This thesis proposes novel approaches for dialogue management in dialogue systems. It covers goal-oriented and open domain dialogue systems. In both setups, it helps to improve quality of dialogues between the system and its users:

1) In the case of goal-oriented dialogues, we improve the accuracy of dialogue state tracking methods of spoken dialogue systems. Our approach limits the effect of automatic speech recognition (ASR) errors. We incrementally enhance our interpretable rule-based core by complex neural networks. The resulting system achieves several published state-of-the-art results on public datasets.

2) Effective dialogue management in open domain dialogue is a difficult problem, which highlights the challenges of natural language processing. In this thesis, we propose a principal solution to develop dialogue systems in open domains. The key idea of our approach is building dialogue systems which interactively learn from dialogues with users. The interactive learning enables the system to improve and to extend its knowledge base continually.

As a part of this thesis, we implemented and experimentally evaluated our dialogue system which can gain new knowledge from interactions in dialogues. We published a dataset and source codes for the effectiveness evaluation of models which are learning from dialogues. Also, we published a dataset with dialogues, where our system is learning new information from its users.

Keywords: dialogue management, interactive learning, dialogue state tracking, open domain dialogue