Fachpraktikum 'Natural Language Processing'

Wintersemester 2020/2021

Topic: Conversational Artificial Intelligence

Supervisors: Prof. Dr. Thang Vu, M.Sc Dirk Väth, M.Sc Lindsey Vanderlyn
Email: thangvu@ims.uni-stuttgart.de
Time: Wednesdays
First meeting: TBD

Target Group

This seminar targets master students interested in Conversational Agents, Artificial Intelligence, and Machine Learning. Background in at least one of these areas as well as solid python programming skills are required.

Topic Description

A conversational agent is a computer program that humans can communicate with using natural language. As technology has improved, conversational agents have become more popular and more complex. They include everyday personal assistants such as Siri, Alexa, or Google Home, as well as more specialized systems like those you might encounter if you call your bank, or need to chat with an online customer service agent. Conversational agents even include some which try to mimic more natural human conversations and have the ability to discuss about "open-world" topics rather than being limited to specific domains.

In this practical class, we will provide you our recently developed open-source toolkit ADVISER which supports the development of conversational agents that are multi-modal (e.g. speech, language and vision), multi-domain (ability to discuss multiple topics), and socially engaged. This toolkit offers a wide range of functionalities including core dialog components such as speech recognition and speech synthesis, natural language understanding, dialog state tracking, dialog policies, natural language generation and also social signal processing components such as emotion recognition and engagement level prediction. Many of them are based on state-of-the-art Deep Learning implementations.

The objectives of this class are as follows:
- To teach you state-of-the-art technologies behind a conversational agent
- To show you how to use the ADVISER toolkit to build sophisticated conversational agents
- To support you in exploring state-of-the-art methods by improving existing functionalities of the toolkit or by implementing new functionalities