

Conversational AI Systems: Current Progress and Future Directions

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Developing an intelligent system that can emulate human conversation, answer questions about different topics, and enable users to complete daily tasks using natural language and voice commands, has been one of the goals in AI since its inception. The field of conversational AI, which aims to develop such systems, has grown rapidly over the past years. Conversational systems are currently applied in a variety of different applications, including customer service, e-commerce, education, healthcare, entertainment, search engines, and smart devices. This growth has been accompanied by the availability of toolkits and frameworks that lower the cost of entry for developers. For example, many businesses and developers are extending the capabilities of speech-based services such as Amazon Alexa, Google Home, Microsoft Cortana, and Apple Siri, to create custom conversational experiences for their customers. However, interactions with existing conversational systems are still limited as these systems are still incapable of handling complex requests, or carrying engaging, consistent, and well-behaved conversations about different topics.

In this talk, I will provide an overview of existing conversational AI systems and discuss limitations and challenges that need to be addressed to make interactions with these systems more useful, personable, and engaging. More specifically, I will provide a classification of existing systems along different dimensions, including the type of input to the system, the functionalities supported, and the architecture of the system. I will then discuss challenges with respect to 1) building unified conversational systems capable of processing different types of inputs and supporting different functionalities, 2) evaluation of conversational systems and approaches for safeguarding against bias and toxic language, and 3) personalization and trust in conversational systems.