Conversational Artificial Intelligence in Production – Challenges and Advances

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Abstract:

Conversational artificial intelligence (CAI) has many uses ranging from chatbots and virtual assistants to real-time guidance for human agents in contact centers. At a high level, the systems employ several technologies in the areas of artificial intelligence (AI), machine learning (ML), natural language processing (NLP) and automatic speech recognition (ASR). To gain insights into the contents of a conversation, both high-level and fine-grain analysis of language structure and components is performed before fusion techniques are applied.

ASR has a come a long way since it became commercially viable in the 1990's. The availability of several fully featured open source ASR systems was a catalyst for widespread adoption in commercial systems over the past decade. Foremost in that surge has been an open source package named Kaldi (*https://github.com/kaldi-asr/kaldi*). More recently, the availability of deep learning based end-to-end neural toolkits has further boosted accuracy and accelerated adoption.

This same trend has been observed with respect to NLP. Deep learning methods, including a powerful encoder decoder architecture known as a Transformer, have paved the way for highly accurate language analysis including entity extraction, sentiment analysis, coreference resolution and summarization. However, traditional approaches to NLP, are also still important when there is insufficient data for training these complex neural systems.

In this talk, we will review various aspects of state of the art CAI systems, discuss the challenges current technology faces, and introduce some approaches to overcome these limitations. We will discuss some challenges specific to commercial implementations that require domain specificity and are constrained by a lack of data. Specific challenges that will be discussed include data curation, modelling, optimization, service delivery and customer success.

Biography:

Aravind Ganapathiraju is currently the Senior Director of Data Science at Uniphore. Prior to that, he was with Genesys for a decade working on ASR, NLP and CAI. Aravind has led several teams that have successfully developed cutting-edge AI solutions to drive consumer and enterprise deployments. Dr. Ganapathiraju believes that AI is not all algorithms. Data holds the key to the success of AI. For commercial AI, it takes algorithms, user interface engineering, software engineering and most importantly, tremendous attention to detail to make successful research flourish in the real-world.