Conversational AI as Question Answering system implementation using BERT

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Abstract:

Conversational AI refers the interaction of users through messaging apps or virtual assistants. Such communications through virtual agents or chat bots are designed to provide personalized user experience. Chat bot interactions are driven by long tail messages, queries or two-way interaction with the private audiences. Real power of conversational AI is in its ability to provide highly personalized interactions with huge number of customers all together. As a business use case, conversational AI can transform traditional ways of communication by facilitating depth engagement with users. One powerful application of conversational AI is question answering system. Either it would be a virtual assistant or chat bot, or any support system designed by any company, question-answering model plays a crucial role to provide such services. An automated question answering system enable a venture to provide its users a more dynamic and personalized experience. Practically, it's difficult for a human being to answer all the queries asked by users at one time. If anyone wants to do so, more resources will be needed to be engaged with customers to solve their issues in services or products offered. Automated question answering system, not only saves a lot of time but also it acts efficient tool to understand customer needs and their behaviour. General Architecture of question answering process is to take input from users, query analysis, information retrieval from the data base, extraction of the most relevant answer and then output the desired answer. It is not as easy as it seems. Why? It is due to the several challenges faced during the modelling. In this session, we will discuss several challenges faced to design a question answering system like data availability, quality of the data, it's interpretability and language barrier. Though serval algorithms have been implanted to design most efficient question answering system, BERT outperform all. We will discuss how Bi-directional Encoder Representation from Transformer [2] algorithm helps in solving mentioned challenges and provide an optional solution. This tutorial will focus on designing question answering model by using human's favourite tool for communication: Natural language processing. For this session, I will assume familiarity with basic terms of natural language processing and python. The body of the talk will focus on implementation of BERT for designing question answering model, feature extraction techniques for data.

Biography:

Arpita Gupta is a Data Scientist by profession and works with Accenture in India with predictive Analytics team of AI sub-division. She is responsible for building AI solutions, modeling and validation of solutions in different domains including computer vision and natural language processing. She holds M.E. degree in Embedded Systems from prestigious college of India, BITS Pilani. Arpita has 3 years of Industrial experience in Data science domain and 2 years of research experience in deep learning. She has also been involved in sharing her knowledge through her website through webinars and her blogs. She is passionate about research advancements in deep learning.

Recent Publications:

1) Li, Y., Leung, P., Yao, L., Song, Q.W., Newton, E.: 'Antimicrobial effects of surgical masks coated with nanoparticles', J. Hosp. Infection, 2006, 62, pp. 58–63 (doi: 10.1016/j.jhin.2005.04.015).

2) Sun, L., Simmons, B.A., Singh, S.: 'Understanding tissue specific compositions of bioenergy feedstocks through hyperspectral Raman imaging', Biotechnol. Bioeng., 2011, 108, (2), pp. 286–95 (doi: 10.1002/bit.22931).

3) Kora, A.J., Sashidhar, R.B., Arunachalam, J.: 'Gum kondagogu (Cochlospermum gossypium): a template for the green synthesis and stabilization of silver nanoparticles with antibacterial application', Carbohydrate Polym., 2010, 82, (3), pp. 670–679 (doi: 10.1016/j.carbpol.2010.05.034).

4) D.R. Thevenot , K. Toth , R.A. Durst , G.S. Wilson . Electrochemical biosensors: recommended definitions and classification. Biosens. Bioelectron.

5) Siddiqui, B.S., Kardar, M.N., Ali, S.T., Khan, S.: 'Two new and a known compound from Lawsonia inermis', Helv. Chim. Acta, 2003, 86, (6), pp. 2164–2169