


Chapter 3

Trends in Conversational Artificial Intelligence: Who Controls the Voice Behind the Bot?

Wasswa Shafik

 <https://orcid.org/0000-0002-9320-3186>

Dig Connectivity Research Laboratory (DCRLab), Uganda

ABSTRACT

This study presents an exploration of emerging trends in Conversational Artificial Intelligence (AI), highlighting advancements in natural language processing, machine learning, and human-computer interaction. As AI-driven chatbots and virtual assistants become more sophisticated, trends such as enhanced contextual understanding, multimodal interactions, and emotional intelligence are shaping the future of conversational systems. The integration of large language models, real-time personalization, and ethical AI considerations are driving improvements in user experience, making AI interactions more seamless and human-like. Additionally, the rise of multilingual AI, domain-specific chatbots, and voice-enabled assistants is expanding AI's applications across industries, including healthcare, customer service, and education. However, challenges related to bias, data privacy, and misinformation persist, necessitating ongoing research and regulatory frameworks. This study examines these trends and their implications for the future development of Conversational AI.

DOI: 10.4018/979-8-3373-3048-8.ch003

Copyright © 2026, IGI Global Scientific Publishing. Copying or distributing in print or electronic forms without written permission of IGI Global Scientific Publishing is prohibited. Use of this chapter to train generative artificial intelligence (AI) technologies is expressly prohibited. The publisher reserves all rights to license its use for generative AI training and machine learning model development.

1. INTRODUCTION

The quest to enable intelligent, responsive, and flexible conversations with robotic systems is a long-standing goal of artificial intelligence research and touches many areas beyond AI alone, such as social psychology, cognitive science, formal philosophy, linguistics, and human-computer interaction. Conversational AI systems go by many names, among them chatterbots, computer conversation systems, dialogue systems, or whatever else practitioners felt was timely and trendy over the years (Shafik, 2023). Here, we will use the most recent trend term, conversational AI system, or conversational AI for short. Conversational agents, in the more traditional sense, have been around since at least the early 1960s, with the first time that a conversational agent passed a behavioral test being the implementation of a famous program in the mid-1960s. Since then, key work in rules- and pattern-based systems, hand-crafted rule-based systems, and, more recently, large-scale neural network-based systems has been undertaken at different times (Bunt & Petukhova, 2023).

Artificial intelligence plays an important role in the fourth industrial revolution, which is a continuation of the rapid industrialization brought about by previous industrial revolutions. Artificial intelligence has developed rapidly in a relatively short period. It has already been applied to various fields, such as medical treatment, stock price forecasts, and translation. Conversational artificial intelligence is a product of artificial intelligence, as its categories are presented in Figure 1. It focuses on the development of a conversational agent. A conversational agent is an artificial intelligence tool that simulates natural language conversation. For example, we can talk with it and ask it to answer questions or perform tasks for us (Seminck, 2023). Conversational AI has developed rapidly due to smartphone AI assistants. In general, smartphone AI assistants can help us with music and videos, making phone calls, setting up meetings, weather inquiries, and opening other apps. Recently, many organizations and academia have begun to consider focusing on developing a conversational agent. In the standard development process, you need to prepare a conversational model, which can be used to convert speech to text and then generate a response (Sonie et al., 2022). Until now, most spoken language systems have used hand-coded rules and state machines to process a given speech signal, but due to a trend toward using artificial neural networks, their potential is not fully utilized. The high performance of artificial neural networks in perceptual tasks suggests that it is also possible to bypass the intermediate encoding of linguistic information and create end-to-end conversational models (Ponnusamy et al., 2021).

44 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/trends-in-conversational-artificial-intelligence/392673

Related Content

Security Solutions for Intelligent and Complex Systems

Stuart Armstrong and Roman V. Yampolskiy (2020). *Natural Language Processing: Concepts, Methodologies, Tools, and Applications* (pp. 1232-1271).

www.irma-international.org/chapter/security-solutions-for-intelligent-and-complex-systems/239989

Information Extraction for Call for Paper

Laurent Issertial and Hiroshi Tsuji (2020). *Natural Language Processing: Concepts, Methodologies, Tools, and Applications* (pp. 394-409).

www.irma-international.org/chapter/information-extraction-for-call-for-paper/239946

Exploiting Chi Square Method for Sentiment Analysis of Product Reviews

Nilesh M. Shelke and Shrinivas P. Deshpande (2020). *Natural Language Processing: Concepts, Methodologies, Tools, and Applications* (pp. 422-439).

www.irma-international.org/chapter/exploiting-chi-square-method-for-sentiment-analysis-of-product-reviews/239948

Narratology and Post-Narratology

(2020). *Toward an Integrated Approach to Narrative Generation: Emerging Research and Opportunities* (pp. 162-314).

www.irma-international.org/chapter/narratology-and-post-narratology/241121

Two New Challenging Resources to Evaluate Natural Language Interfaces to Databases Generated Based on Geobase and Geoquery

Juan Javier González-Barbosa, Juan Frausto Solís, Juan Paulo Sánchez-Hernández and Julia Patricia Sánchez-Solís (2021). *Handbook of Research on Natural Language Processing and Smart Service Systems* (pp. 70-100).

www.irma-international.org/chapter/two-new-challenging-resources-to-evaluate-natural-language-interfaces-to-databases-generated-based-on-geobase-and-geoquery/263097