



CHATBOT AS ARTIFICIAL INTELLIGENCE LEARNING IN KNOWLEDGE MANAGEMENT

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Abstract:

This research aims to create a chatbot as Artificial Intelligence learning in knowledge management. The participants are teachers or lecturers engaging in the virtual education academic. Using machine learning technology on the <https://m.chatboat.university> platform, the result chatbot product development includes several steps, including: 1) using chatbot templates, 2) creating a self-contained chatbot, 3) modify the background and short description; 4) add chatbot content (image, text, video); 5) include quizzes and fun facts; and 6) create the chatbot design with thematic discussion. The development of the chatbot to provide students or users with a future learning that includes innovation, knowledge, learning community as displayed on the chatboat. This study has implications for learning innovation based on computational chatbots in interactive conversations as a transformation to support education in the 5.0 era.

Keywords: *Artificial Intelligence, Chatbot, Learning Management*

INTRODUCTION

Artificial Intelligence has been around for decades and has evolved to perform tasks that require human intelligence. AI application development occurred between the late 1980s and the early 2000s, when AI evolved into a multidisciplinary science that includes expert systems, neural networks, robotics, Natural Language Processing (NLP), Speech Recognition, and Virtual Reality. Knowledge Management (KM) is another multidisciplinary field. Knowledge management encompasses psychology, epistemology, and cognitive science. Individuals in organizations should collaborate, share, create, and reuse knowledge. KM aims to improve performance, boost innovation, and broaden individuals' and organizations' knowledge. AI provides mechanisms that allow machine learning to acquire, process, and apply knowledge to perform tasks while also allowing human knowledge to be used in decision-making processes. Knowledge management enables knowledge comprehension, whereas artificial intelligence enables knowledge to be extended, used, and created in ways never before imagined.

Cognitive computing, which uses computerized models to simulate human thought processes, is the link between KM and AI. Self-learning/deep learning artificial neural network software that uses text/data addition, pattern recognition, and natural language processing to mimic how the human brain works is used in cognitive computing. Cognitive computing is emerging as a method for extracting knowledge from big data, where strategy is also a process-centered approach, and the interorganizational aspects of decision support for new technologies continue to provide insights into how to process big data to improve decision making. However, AI products have yet to make much of an impact on the learning side that attracts students and makes it enjoyable for users. Thus, Knowledge Management, in tandem with the rapid development of technology, leads to Artificial Intelligence, which has been applied to a variety of fields, including teaching. Innovative services, such as the

development of Deep Learning-based Chatbots, are made possible by technological advancements. According to Schlesinger et al. (2018), due to the rapid growth of big data and AI, as well as the popularity of instant messaging platforms, chatbots are being used in a variety of fields.

Kim, Young, and Hyun Kim (2022) investigated how to apply artificial intelligence for social innovation based on agent modeling, social entrepreneurship, stakeholder capital, and social contract approaches. Kim et al's study (2022) offers guidelines for assessing performance and creating implementation strategies for social innovation projects combined with artificial intelligence. Lotfi and Bouhadi (2021) revealed that artificial intelligence (AI), which aims to reproduce human intelligence and perform tasks that require the use of computers, is called "artificial". Lotfi and Bouhadi (2021) explained that Machine Learning (ML) consists of programming algorithms from data and past experiences through interaction with the environment. Chatbots are used for communication through dialogue or text, simulating human dialogue and providing effective interactive interfaces (Graesser et al., 2004). Chatbots function as customer service "employees" to answer user questions through preset commands and dialogue procedures, simple and routine user services such as information questions or account settings can be completed (Chandra & Suyanto, 2019). Chatbots function around the clock, reducing business costs and ensuring convenience for customers (Xu et al., 2017). Besides being widely used in corporate commerce, chatbots are used in education, entertainment, and as personal assistants (Goh et al., 2008).

Recent studies have considered natural language text as an input method that allows users to select from a specific list of fixed options. Some studies (15.1%) are voice-based, and others use avatars to increase user confidence and system perception (Eisman, Navarro, & Castro, 2016). A chatbot is an online talking message to fulfill user expectations interactively for various fields such as business, and teaching. However, for teaching in Indonesia, its use in learning classes has not been widely socialized, so massive training is needed for educators to get to know and be able to apply chatbots to the subject areas they teach both thematically and regularly. The chatbot is a direct learning application through a process called "Deep Learning". In this process, chatbots are created using machine learning algorithms. Chatbots learn everything from data and human dialogue. Chatbots can mimic real-life conversations through neural networks i.e. neuron circuits (artificial neurons) that solve artificial intelligence problems. The chatbot is trained to develop its awareness of text, and users can teach it how to communicate with others. Alternatively, it can teach the chatbot through training data such as movie dialogues or game scripts.

Human-to-human dialogue is the preferred way to create the best deep learning chatbots through 'conversational agents', known as 'chatbots' (Grewal, Roggeveen, & Nordflit, 2017). Chatbots can be seen as a Natural User Interface (Tan & Liew, 2020) for users to interact with computers more intuitively through natural language, easing the acceptance of e-commerce, especially for fashion. However, the main challenge remains the complexity of human language and the effectiveness of chatbots in this context (Pantano & Pizzi, 2020). Thus, chatbots can be seen as an important and relevant interface element for tasks such as providing recommendations, exploring and searching large catalogs, completing virtual fitting room features, and providing (post-sale) customer service (Figure 1).

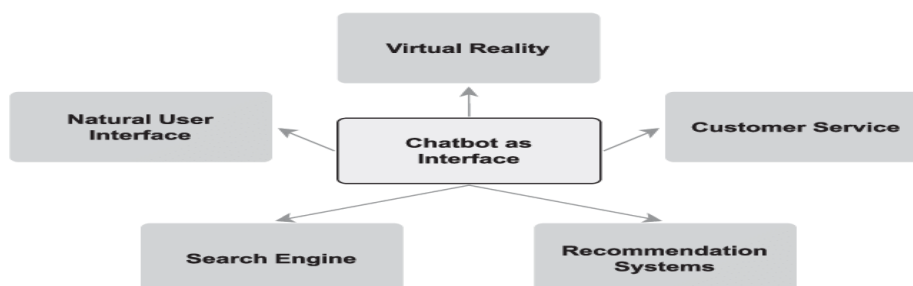


Figure 1. Chatbot Interface

Chatbots as conversational recommender systems offer a set of interactions that help improve preference acquisition and interact with users through natural language. As such, chatbots can provide a mechanism to capture contextual information, as intended by so-called context-aware recommender systems. This study contributes to learning innovation by utilizing artificial intelligence to entice users to explore the knowledge designed in web-based chatbots.

RESEARCH METHODS

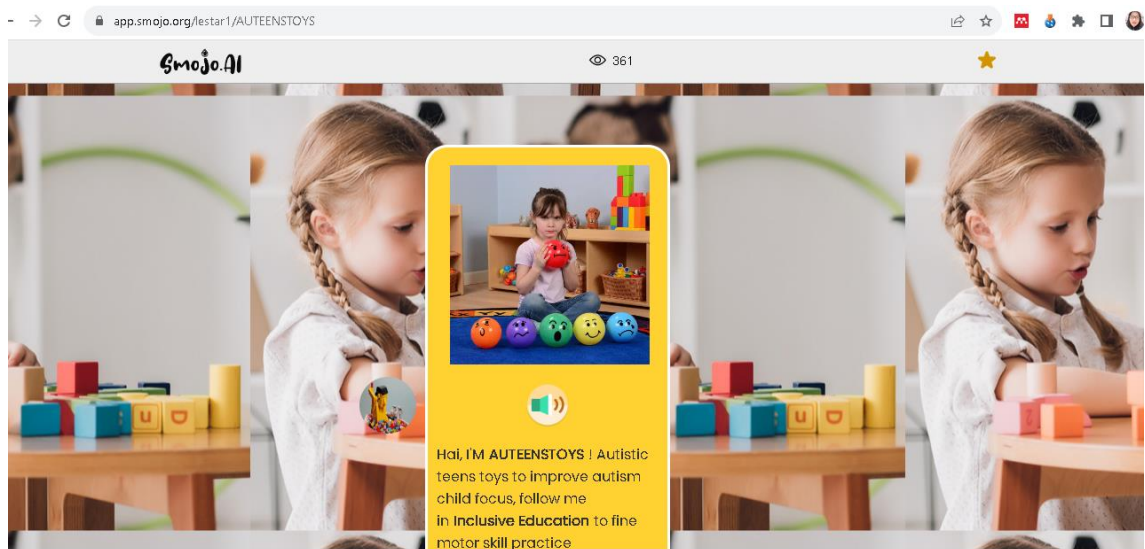
In the chatbot development method, natural language processing is used with a computational design that allows the machine to respond to the user's language, (Iswandi et al., 2013). Natural Language Processing aims to respond to the machine's understanding of the meaning of the user's language (Alamanda et al., 2016). In the development of chatbots, reflective models are used to improve the design (strategy, evaluation, and revision). Chatbot uses a programming language in its creation with several supporting technologies, including machine learning, natural language processing, natural language understanding, and machine reading comprehension. Machine Learning allows chatbots to understand text, images, and videos. Natural Language Processing and Natural Language Understanding can recognize the purpose of the text, images, and videos, then Machine Reading Comprehension can understand and respond to the message.

The development of Chatbot is supported by Artificial Intelligence software interactively through data and is easily personalized. The bot is designed to capture messages with Natural Language Understanding (NLU) tailored to its users. The design of the chatbot platform using User Interface (UI) has an important role in an application that can attract readers to explore chatbots. User Interface is the user interface in the application starting from the homepage, media buttons, logo visuals to the background to the basic colors of the application. Furthermore, User Experience (UX) is a description of the user experience related to comfort when using the application. A chatbot works by analyzing user requests and providing responses based on user input. The chatbot relies on keywords that already exist in the system, so the chatbot will adjust to the keywords of the question being asked. The researcher, as a participant, engaged in the Virtual Education Academy program as part of the teacher training activity. The training activity is part of a course organized by VEA, an organization of education with the aim of training a focus on teachers in school and university. VEA in collaboration with ESAA Project Uni Eropa as a nonprofit association.

RESULTS AND DISCUSSION

In the development of chatbots using certain programming languages that have been provided by the developer so that users do not have to understand programming languages but only change certain symbols to fill the content on the menu adjusting the outline, including chatbot goals, specific topics of chatbot material, chatbot outline/sequence. The chatbot has several main menus consisting of material, exercises, fun facts, and others. The results of chatbot design in the link <https://app.smojo.org/lestar1/AUTEENSTOYS>

Chatbot Auteentoys is a chatbot application that describes a child who has autism in facing various challenges in their environment. The chatbot created consists of material components, exercises, and fun facts. Chatbot allows students to increase knowledge and understand learning through the games. Therefore, in the development of this chatbot, the program outlines a description of the inclusive education chatbot as a theme, and a description of the Auteentoys as subtheme with Artificial Intelligence functionality as a learning interface to determine whether the chatbot can increase interest in learning materials. The following is a display of the Auteentoys chatbot.



This study aims to develop artificial intelligence as a social innovation used in digital transformation. The chatbot is computerized software for processing and responding to textual, sound, picture, and video messages. Chatbots are used for communication through dialogue or text, simulating human dialogue and providing an effective interactive interface (Graesser et al., 2004). Conversational user chat robot interfaces have evolved from simple text interfaces to interfaces consisting of various interactive multimedia technology applications. The chatbot theme of the research is an artificial intelligence product in learning for autistic children to easily understand the topic of learning. Autistic children who have unique learning with a chatbot that functions as an instructor, students can play any game in the chatbot's simplicity. The chatbot project identified several aspects combined text, images, and videos, including: Chatbot target audience: autistic children, Purpose of chatbot: to easily understand the topic of games for autistic children, Specific topics/materials: games children, Chatbot framework: Main menu, exercise, Fun fact.

Chatbots can now serve as customer service "employees" to answer users' questions; through preset commands and dialogue procedures, simple and routine user services such as information inquiries or account settings can be completed (Chandra & Suyanto, 2019). Chatbots function around the clock, reducing business costs and ensuring convenience for customers (Xu et al., 2017). Besides being widely used in corporate commerce, chatbots are used in education, entertainment, and as personal assistants (Goh et al., 2008).

Ubiquitous learning as part of the vision, Weiser (1999) describes a world of smart objects and smart contexts based on computing, with an innovative conceptualization of the interface between computers, networks, and humans (Dede, 2007). Mobile learning became the main focus of electronic learning (or e-learning), which is now practiced globally (Wong, 2018). The digitization of society, the changing structure of education, and the increasing number of resources have accelerated the development of open learning environments. Computer systems can accommodate students and their learning styles by providing information anytime and anywhere based on their characteristics, needs, and desires to improve their academic performance and productivity (Suartama et al., 2020). Liao et al. (2018) proposed a multimodal domain knowledge-enriched fashion chatbot that understands the semantics of product images and modifies attributes during back-end retrieval, offers matching suggestions, and generates responses with multiple modalities. The multimodal chatbot has been proposed to be integrated into visual media with a textual chatbot interface. Multimodality chatbot to consider consumer factors such as attitudes, emotions, likes, and dislikes, to provide enhanced recommendations accordingly. Hence, the research illustrates that artificial intelligence is relevant and important for organizational success in addressing social innovation by generating a

common framework that practitioners can use.

CONCLUSION

This review aims to describe the development of Chatbot as a Deep Learning-based learning project for future chatbot applications and design approaches in general. The implication of this study is that chatbots can be used as a creative space in learning design to create simple themes that are more interesting for users to understand a knowledge concept. The empirical review of the development of a learning project chatbot to increase knowledge and understanding of the comprehensive attributes of a chatbot programming approach. Furthermore, the review of this chatbot is still needed as an integrated development effort in other aspects, such as services in the field of education, which have not been widely implemented compared to business and other fields.

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