

OPEN ARTIFICIAL INTELLIGENCE ANALYSIS USING CHATGPT INTEGRATED WITH TELEGRAM BOT

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ABSTRACT

Chatbot technology uses natural language processing with artificial intelligence that can interact quickly in answering a question and producing relevant answer. ChatGPT is the latest chatbot platform developed by Open AI which allows users to interact with text-based engines. This platform uses the GPT-3 (Generative Pre-trained Transformer) algorithm to help understand the response humans want and generate relevant responses. Using the platform, users can find answers to their questions quickly and relevantly. The method used for OpenAI's research on ChatGPT integrated through Telegram chatbot is using a waterfall method which utilizes open API tokens from Telegram. In this research we develop OpenAI application connected with telegram bot. This application can help provide a wide range of information, especially information related to the Semarang State Polytechnic. By using Telegram chatbot in the program, users can find it easy to ask because it is integrated with OpenAI using the API. Telegram chatbot, which has a chat feature, allows easy communication between users and chatbots. Thus, it may reduce system errors on the bot.

Keywords: API, Artificial Intelligence, Bot Telegram, ChatGPT, Open Artificial Intelligence.

I. INTRODUCTION

AN artificial intelligence (AI) system simulates the behavior of a person using a computer system. The term artificial intelligence refers to an emerging field of computer science that aims to develop machines that can automate human activities and processes [1], [2]. Specialized AI applications are expert systems, natural language processing, and machine vision. AI enables machines to learn from experience, to adapt to changing inputs, and to perform tasks like humans [3]–[6].

Chatbots are one of the most common methods of interpreting language through natural language processing (NLP). An NLP is a tool used to study human-computer interaction using the language of humans. This type of computer facilitates communication between humans and computers by allowing them to communicate in their native languages [7], [8]. NLP has many purposes that can help improve communication, such as machine translation and assisting human-machine communication, for example with conversational agents and others [9]–[11].

Chatbots are computer programs designed to simulate a conversation between two people and have recently become popular due to the widespread use of messaging services and natural language understanding. Chatbot technology has been around since 1965 and continues to grow. Chatbots can be developed using various technologies including Technical Rule Based Artificial Intelligence, Artificial Intelligence Markup Language (AIML), Chat Fuel, Chat Scripts, Unstructured Information Management Architecture (UIMA), Language Understanding (LUIS) and Google dialog flows [12]–[14].

OpenAI is a non-profit organization that aims to develop AI technology for the good of humanity. OpenAI focus on AI research and development of security, privacy, and fairness, and provides resources to help others build better AI. One of the most popular products is ChatGPT.

ChatGPT is an emerging technology that allows users to interact with text-based machines. This technology uses the GPT-3 (Generative Pre-trained Transformer) algorithm to understand the context and generate relevant responses. ChatGPT can be used for a variety of purposes, including helping users

find information, answer questions, and complete tasks. This technology can also be applied to create chatbot applications that can help users in various situations. ChatGPT has become one of the most popular technologies in Indonesia and has been adopted by various companies to enhance their customer service. By using ChatGPT, companies can provide faster and more efficient customer service and improve customer experience. ChatGPT can also help companies increase productivity and efficiency. By using ChatGPT, companies can complete tasks more quickly and efficiently, and improve the quality of their customer service [15].

Telegram Bot is a special Telegram account that is designed to handle messages automatically. Users can interact with bots and send command messages via private or group messages. Telegram Bot accounts do not require an additional telephone number to set up [16], [17]. This account only serves as an interface for code running on a server. Telegram bots can be built according to the users' needs. The software can be integrated with other services for smart homes, social services, custom tools, and other virtual implementations [18]–[20].

ChatGPT integrated into a Telegram bot is easy to use because users do not need to open the ChatGPT website directly, but instead it can be accessed easily using Telegram. Furthermore, with convenient access using Telegram bots, prospective students or the public in general can find information about the Semarang State Polytechnic. This is because everyone can easily access and utilize ChatGPT technology. Therefore, the research involves the integration of ChatGPT into a Telegram bot more for any users who want to know about the Semarang State Polytechnic. The research problem of this research is how to find answers from keywords quickly and precisely to produce a fast and relevant response.

This research aims to develop OpenAI applications that are connected to Telegram bots. Research on chatbots shows high accuracy, while the response time for answering questions of less than 5 words is quite short. This Telegram chatbot is capable of answering questions asked by users according to the knowledge base that has been previously prepared and implanted. The response given by the chatbot depends on the keywords entered. The chatbot will generate responses to keywords with the most similar wording pattern from the textual database.

II. RESEARCH METHOD

The method used for the research was the Software Development Life Cycle (SDLC) with the following explanation [21], [22]. SDLC is a process that can produce an application more concisely and efficiently [23]. The model used in SDLC is the waterfall model. The stages of this research are 5 steps. They are requirement analysis, system design, implementation, verification, and maintenance. First is requirements analysis. This stage involves the process of analyzing or collecting data requirements related to the system that is going to be created. Second is system design. The specifications of the requirements from the previous stage will be studied in this phase and the system design will be prepared. This stage helps define the overall system architecture. Third is implementation. It is the process of creating an application using a specific programming language. The process of writing application code refers back to the previous analysis. Fourth is verification. The verification stage includes system integration and also tests the system that has been created. At this stage the system is

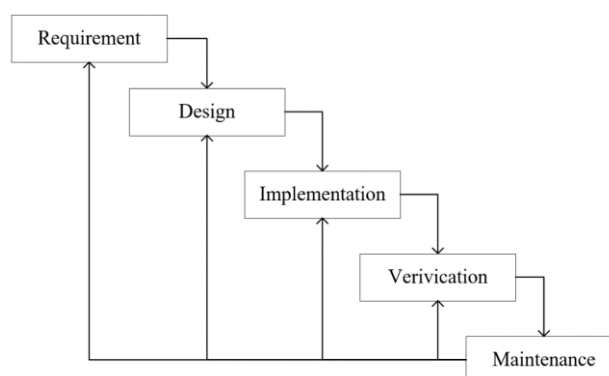


Figure 1. Waterfall Model

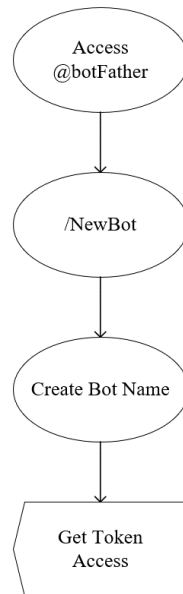


Figure 2. Telegram Bot Creation Flowchart

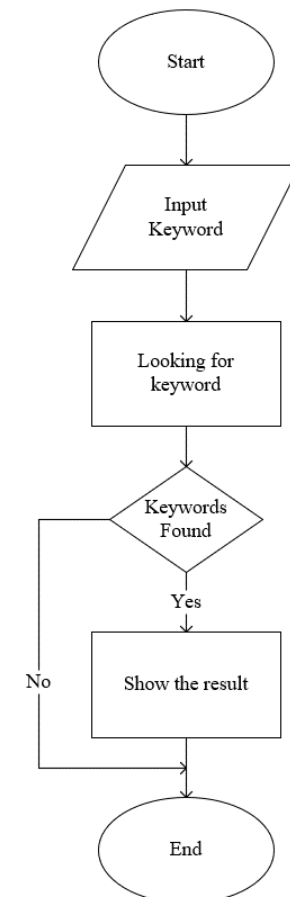


Figure 3. Telegram Bot Flowchart

evaluated to see whether it is in accordance with the specifications or to check for any errors in the system before being repaired again. Fifth is maintenance. This stage generally includes system installation and system testing.

The stages of this research refer to the waterfall method as shown in Figure 1. According to a linear system, the waterfall method is considered as a classical one. The output from the previous stage will be incorporated into the next stage. The waterfall method starts with the following stages: requirements, design, implementation, verification and maintenance.

The framework of this research is the set of steps that are interconnected in a systematic arrangement to solve a problem, including the process of creating Telegram bots as shown in Figure 2. Figure 2 shows that a Telegram bot is created using @botFather where the guide to build it can be accessed. This is done by logging in to @botFather. After accessing the father bot, a bot command is created with /newBot. A bot auto reply will be sent asking for a name for the bot. After successfully providing a username, @botFather sends an access token to the bot.

The steps of accessing Telegram bots are shown in Figure 3. As displayed in Figure 3, the process starts with inputting keywords that will be searched for in the Telegram bot. The bot will look for related keywords in the OpenAI ChatGPT database. In searching for keywords, if the keywords inputted are found, the results will be displayed. In contrast, if the keyword entered does not exist, it will display other answers and the search process is complete. Steps in implementing ChatGPT integrated with Telegram bot can be described in this sub section.

A. Installation of Ubuntu server 20

Before carrying out the integration of OpenAI ChatGPT, an Ubuntu server must be installed first.

B. Python installation

After the Ubuntu server has been installed and confirmed successful, Python is installed. This is done for an easier integration process. Programming languages such as Python are included in the category of programming languages. Python is classified as an interpreter, so it can be executed directly according to the desired instructions [24]–[26].

C. OpenAI account creation

The next step is to set up an OpenAI account which can be done before creating an API Key.

D. Creating OpenAI API Keys

Creating an OpenAI API Key can be done after creating an account. The API key is a set of functions, commands and protocols that can be used to connect one application to another so that it can interact [24].

E. Telegram integration

After an OpenAI API key is created, it is then integrated with Telegram. This integration is done to create Telegram bots that can be used to build chatbots.

F. Evaluation

After everything is finished, an evaluation is made to determine whether the Telegram chatbot can run as expected. Furthermore, the results of the answers are compared to the truth.

III. RESULT AND DISCUSSION

The creation of a chatbot with Python-Telegram-bot using ChatGPT is designed to make information easier to find. Besides Indonesian, English, and Arabic, the chatbot can also understand programming languages.

The results of the trial are presented in the form of a table. The trial is carried out by checking the application repeatedly and thoroughly to ensure it is free of bugs or errors in the system.

As part of the first stage, Figure 4 is the first experimental figure, beginning with a conversation on the created bot. At this stage, the chatbot is expected to build an answer as a guide, and the results are as expected. An example is shown in Figure 4.

A desired output form can be seen in Figure 4 which shows that the chat starts with the /start and /ask dialogs. The bot can answer according to the expected guide.

In the following stage, the chatbot should offer the correct response in the correct language (Indonesian, English, Arabic and programming languages) and the results are as expected, as illustrated in Figure 4, Figure 5, and Figure 6.

Almost all of the experiments have been carried out several times without errors in either the system or the answers. This is an advantage that exists in the OpenAI ChatGPT system integrated with the Telegram chatbot. The results of the Telegram bot can be seen in Figure 4, Figure 5 and Figure 6 below.

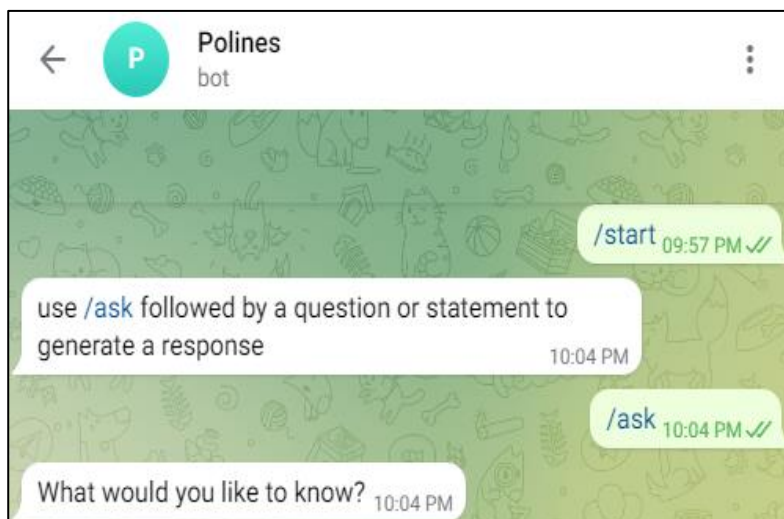


Figure 4. First Test Result

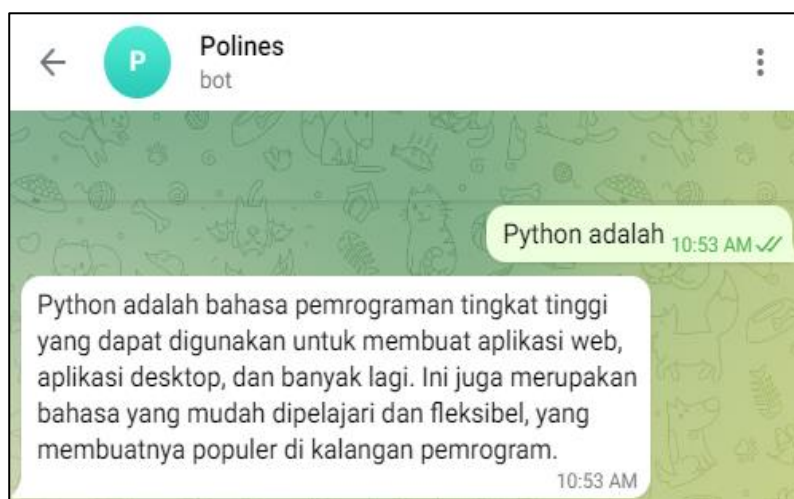


Figure 5. Result Test Using Indonesian

Using a Telegram bot makes it easier for users to find information they want, especially information related to the Semarang State Polytechnic. In addition, accessing information using Telegram bots is easy because the users can simply use their smartphone. This may result in a more efficient use of the Telegram bot. Furthermore, it can provide detailed answers to the questions.

The next part of the experiment is to compare answers to the same question using telegram bots and websites found on the ChatGPT website. The results show that answers to the same questions are not always the same.

The comparison between the results of ChatGPT via the OpenAI website and using Telegram bots integrated with ChatGPT shows a number of differences (Figures 6 and 7). When using the OpenAI website, the answers are more complete compared to the answers using Telegram bots. However, the Telegram bot can be easily accessed using the user's smartphone, so the user can maximize their time efficiency in asking questions on the ChatGPT Telegram bot. For example, questions related to the Semarang State Polytechnic can be asked through the Telegram bot. On the website, the explanation is more coherent and complete. There may, however, be limitations in the website if the question, for example, is in Arabic. By contrast, this would not be an issue when using a Telegram bot. The results show that ChatGPT on Telegram bot works for users as expected. In addition, it has a potential to be an innovation in providing information about admissions for future students at the Semarang State Polytechnic. By generating fairly accurate human-like dialogue responses, it could help solve the problem of providing information requested in the question.

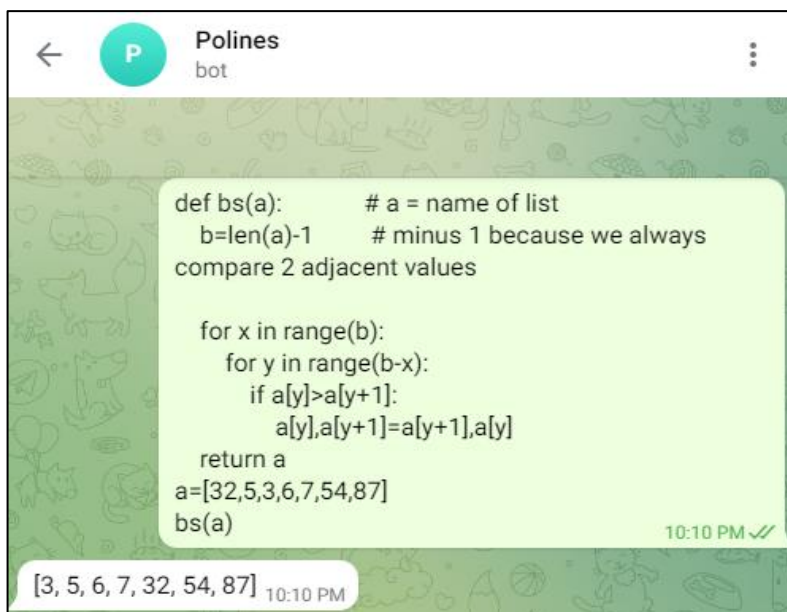


Figure 6. Experiment Results Using Bot

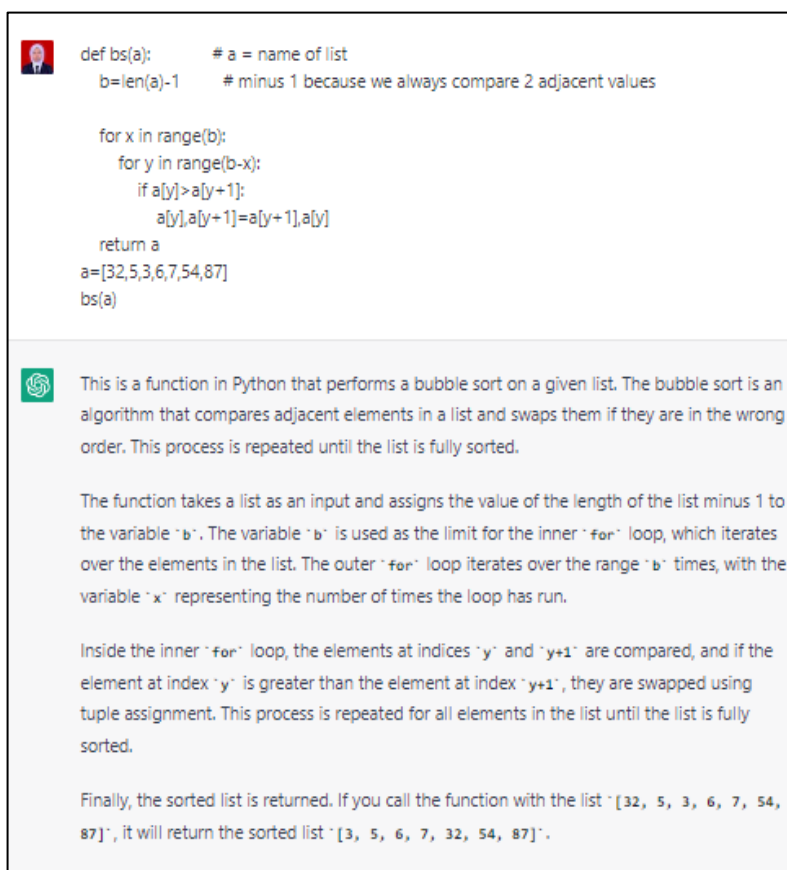


Figure 7. Experiment Results Using OpenAI Website

IV. CONCLUSION

OpenAI on ChatGPT integrated with Telegram chatbot is an application that can help provide a wide range of information. By using a Telegram chatbot, the information asked can be generated easily because the chatbot on Telegram has a chatbot feature that allows the chatbot to engage with users in conversations, thereby reducing system errors on bots. The Telegram chatbot is easy to use because it can find information in the most time efficient manner. Future students who want to know about the

Semarang State Polytechnic can ask the Telegram chatbot. Searching for information can be easier and more efficient using the chatbot.

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