

## DESIGNING CHATBOT FOR COLLEGE INFORMATION MANAGEMENT

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### Abstract

Information plays an important role in human daily life in which it is expected to be more understood, fast, clear and accurate. In line with technology development and the mission of Informatics study program to develop its services for college students, that is, information is derived through information systems and chat. Students in this case is whom study at the university, institution or academy. This study aims to create Chatbot as Virtual Assistant that provides information for college students through data stored on the system which contains Informatics study program and new information if the data is not founded. Chatbot is a computer program designed to socialize interactive conversations or communication to users (humans) through a text, sound and visual. Through this application, they are able to communicate for various practical purposes such as customer service, information acquisition and a value of digital campus with integrated information system. Thus, Chatbot with artificial intelligence eases users to obtain information quickly and precisely.

**Keywords:** Information, college student, chatbot

### 1.0 INTRODUCTION

Quick information is highly demanded by people today as part of their need in daily life. However, the instrument to obtain the information is still being one of obstacles at this time. Users need an interactive information aids such a discussion using daily language in order to reach the purpose and objectives of the information. The rapid development of information technology lately has been widely spread almost all aspects of life. This is marked by the number of users' computer for the benefit of companies, businesses, entertainment, education and health. The Informatics study program at Mercu Buana University adopts Information Technology to provide a variety of information for Informatics students, with the aim to avoid time loss significantly in delivering information to students.

However, there are several problems with the current service today such as: limitations in serving student complaints, lack of responsiveness in serving students' questions, ineffective in managing the needs of students if they have become alumni to get a job. Thus, it is important to develop information technology to deal with those current problems in terms of management systems (1, 2, 3). The development of information technology is also not limited to management systems, but also it applies to students' relation such as developing one of artificial intelligence systems, that is ChatBot. There are several types of Chatbot development namely question and answer, Chatbot monitoring and Chatbot searching.

Chatting robot or well-known as Chatbot is one of the sophisticated technology that will replace a human job. Through the Chatbot system, humans or users can easily find the searched information. Chatbot starts to be implemented in a website. The first Chatbot was

established by Joseph Weizenbaum, MIT professor in 1966. At that time, the chatbot was made very simple. Next, Chatbot ELIZA is an operating program in MAC time-sharing. The system of MIT creates some languages as a conversation between humans and computers. The input sentence is analyzed based on the decomposition rules triggered by the keywords that appear on the text input. Chatbot contained in the website generally answers a question asked by the user. The scope in question is already limited, so it does not go beyond the specified scope. But there are also Chatbot applications that do not have scope restrictions, so in terms of answering a question often does not match what is asked by the user.

Chatbot is a computer program designed to simulate an interactive conversation or communication to users (humans) through text, sound and visual forms. Furthermore, the application system is used in order the website is more interactive since it can conduct question and answer to provide information related to academic services in the Informatics study program. Nowadays, other Chatbots (computer systems based on natural languages) have emerged, which are more advanced than ELIZA. Alike the Chatbot named A.L.I.C.E and others that won the Loebner Prize use artificial intelligence as the basis for their application. Although there have been many Chatbots popping up, the use of the Chatbot itself has not been maximized. These Chatbots tend to only be used to win competitions or entertainment.

In this study, the researcher implements an information center for Informatics students through the ALICE base knowledge (Artificial Linguistic Internet Computer Entity) as one of the Chatbot applications that is currently developing. The ALICE Chatbot knowledge base is based on AIML (Artificial Intelligence Markup Language). AIML produces Chatbot that is able to integrate a received input to an input of text, so there will be a conversation between the user and the program. The questions or input entered will be traced in the ALICE database, if it is not found, a crawler process will be carried out to the information system with the aim of finding answers that match the question you want to find out, then the answers found will be added to the ALICE database to get new knowledge of the object being asked. Utilization of Chatbot which has been equipped with information such audio makes it easier for users to get information from data requested from students, as well as being informed to users quickly and accurately. This application is further expected to become a medium of online learning. The application of Chatbot at the Informatics study program by using AIML is expected to make it easier for users to find information in the Informatics study program (4). The purpose of this research is expected to provide a good solution in dealing with problems in receiving information for students of Informatics study program. The need of new innovations as a learning medium in the form of a conversation application (Chatbot) or chatting-robot as a tool for distance learning media that supports lecturers to deliver knowledge so that it can be a solution for the smooth process of distance teaching and learning. Furthermore, this learning media can be accessed by students anywhere and anytime.

## **1.2 Outline of the Problem**

Due to the limitations of data processing and the number of data processing that must be completed in a short time, the unintegrated information system, the management must input the same data several times in several different information systems in which they own all students' data to be accessed necessarily, those are the background of the need for the Chatbot application in managing students/academic databases in order to achieve a better and effective information system, and provide as much information as possible in accordance with what they need. Chatbot is used in dialogue systems for various practical purposes such as student/academic services, information acquisition and digital campus with an integrated information system.

## **1.3 Objectives and Benefits of Research**

The objectives of this research are to make students easier in getting information about lecture services, Job Training, MPTI, Final Projects, information on how to obtain a diploma if already graduated and others related to academics. Besides, in the part of academic, they are able to answer all questions what is needed by students in an integrated manner.

## 2.0 THEORETICAL

### 2.1 Chatbot Data

Chatbot data consists of basic knowledge in AIML, simplification of complex grammatical forms into simpler forms, division of sentences into sub-sentences, word syntax, correct spelling and good and correct grammar. Chatbot was created and formed through the process of supervised learning and Chatbot's previous utterances. The data used in this study is data that is often needed by students to be known such as NIDN, NIP, Lecturer Interest, PKM Information and Job Training Information, MPTI and Final Projects, as well as crawler data taken from the Information Systems of Informatics study program. The retrieval of this data is regarded as part of creating and shaping Chatbot's personality so that Chatbot has new knowledge needed by users (students/academics).

The Chatbot program was firstly written by Joseph Weizenbaum, MIT professor in 1966. At that time, the chatbot was made very simple. Although the development of artificial intelligence today is very rapid and sophisticated, the Chatbot still maintains in the artificial intelligence (5). Chatbot is a conversation simulator in the form of a computer program that can dialogue with users in natural language. Due to chatbot is only a program and not a robot (chatbot does not have a body and a mouth so it cannot talk like humans), what is meant by dialogue between humans as users with Chatbot is carried out by typing what will be talked about and Chatbot will give a response. People who create and develop Chatbot programs are called bot masters (6).



Figure 1. Chatbot Application

### 2.2 Hypertext Preprocessor

Hypertext Preprocessor (PHP) is a script that runs on the server side added in HTML. PHP itself is an abbreviation of Personal Home Page Tools. This script will create an application that can be integrated into HTML so that a HTML page is no longer static but dynamic. The nature of the server side makes the script work on the server while what is sent to the browser is the result of the process of the script that has been in HTML. PHP was created in 1994 by Rasmus Lerdorf. But it was developed by someone else and after going through three works of writing. PHP is an open source product, so the source code from PHP can be used, replaced, edited without having to pay or be charged for its use.

Application or software is a computer system with integral part. Based on its environment, applications can be divided into desktop-based applications, web-based applications and mobile-based applications. Desktop-based application is an application that requires an installation process on each computer that will be used in its operation such as Microsoft Office, Mozilla Firefox, Adobe Photoshop and Macromedia Dreamweaver. Meanwhile, web-based applications do not require installation on every computer because the application is on a server that is used. To open the application simply use a browser that is connected through the network to the server. Website is an example of a type of web-based application. The third type of application, which is a mobile-based application is an application that can only be run

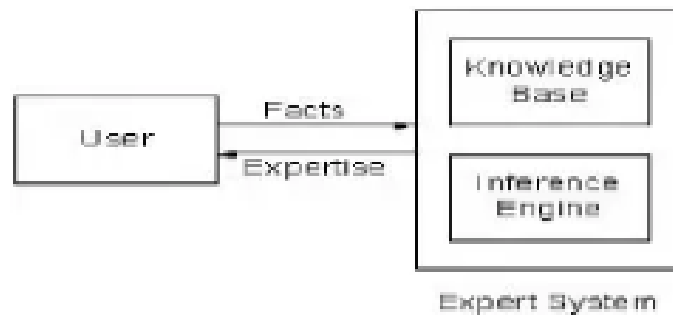
on mobile devices such as mobile phones, smartphones and PDAs. The types of these applications include the Opera Mini browser, Blackberry Messenger (BBM), WhatsApp Messenger and Polaris Office (7).



**Figure 2.** PHP Application

### 2.3 Expert System

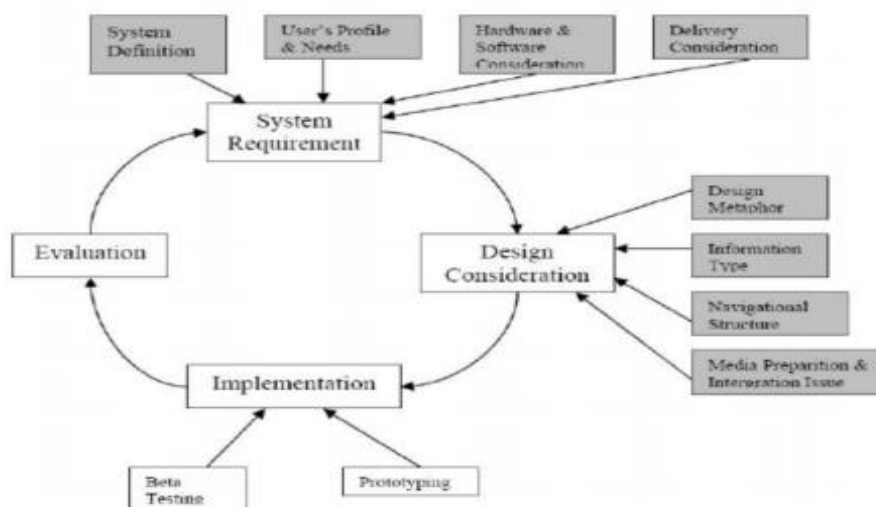
Expert System is a program that acts as a smart advisor or consultant by taking knowledge stored in a particular domain (8). A user who is not experienced in diagnosing a problem can solve a difficult problem and make the right decision. In general, an expert system is a system that attempts to adopt human knowledge to a computer, so that the computer can solve problems as is usually implemented by experts. Expert systems are not to replace the position of an expert but to require the expert's knowledge and experience. It was first developed by the AI community in the 1960s. The first clothing system is the General Purpose Problem Solver (GPS) developed by Newel Simon.



**Figure 3.** Basic Concepts of Experts Systems

### 3.0 METHODOLOGY

This research is conducted with a descriptive research method, carried out by comparing the results of all data description to the existing reality so that provides a problem-solution (9). The research framework is an adaptation of the Dastbaz (10) Interactive Multimedia System Design and Development method which can be explained as follows:



**Figure 4.** Framework of Research

The system constructed is an Android-based application using native Android programming. The system makes requests or requests for authentication data to firebase authentication via the internet. If it has obtained authentication data from firebase authentication, the system displays the main page and the authentication is successful. The learning system obtained by students during study is considered less effective due to lack of students' motivation or interest (11).

#### 4.0 RESULT AND DISCUSSION

To create a Chatbot, it requires some specifications to support applications responsively in line with the development of existing technology. In the application of learning Chatbot, the initial scenario is to provide input greeting text then the user can reply the greeting. Next, the user continues to enter the keywords to get a response. They can enter keywords related to student's self-identification information, what the student's study program is and what complaints they want to reach the relevant parties.

Chatbot Application Design:

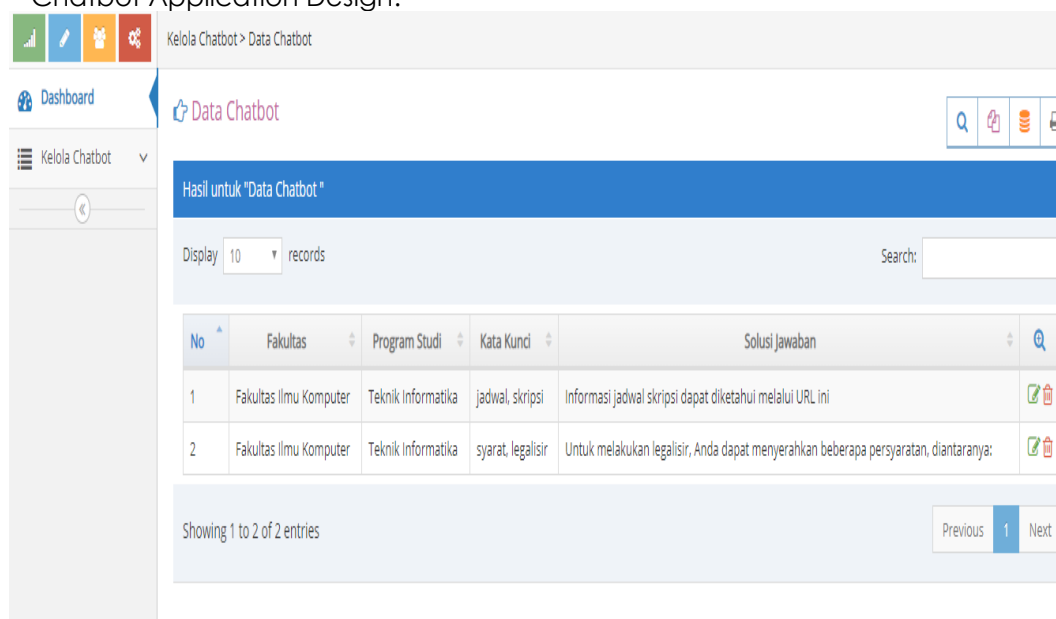


Figure 5. Admin Interface

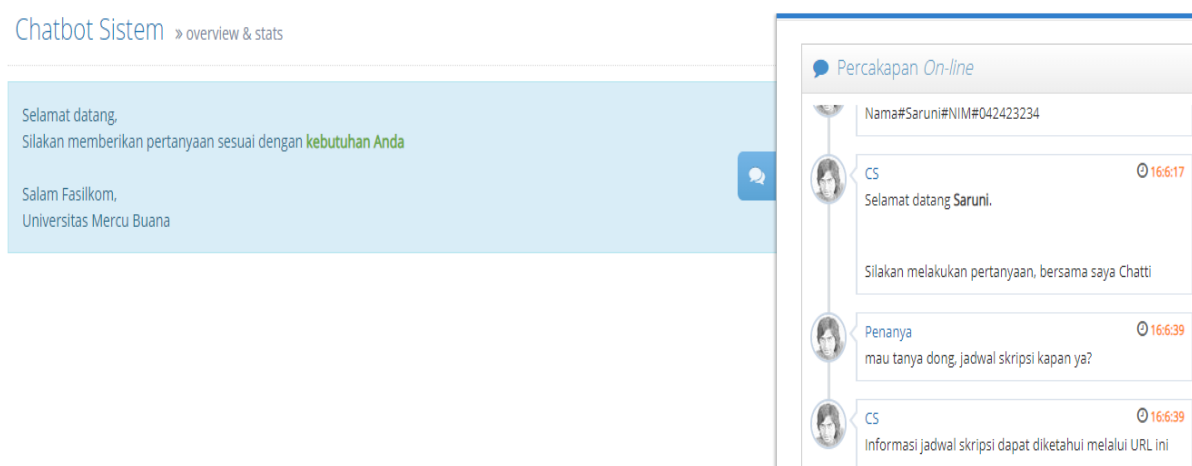


Figure 6. User Interface

Based on the test results, Chatbot can provide responses in line with what is entered by the user. Software testing is completed by verification and validation. Testing the effectiveness of the use of Chatbot is carried out by measuring the quality of the use of Chatbot and by considering aspects of testing at ISO 9126. The SIT table contains a list of applications that can be asked to Chatbot. The topic table lists the available topics on each application in the sit table. While the question table contains a list of available questions on each topic. In the sit

table, topics and questions have columns to determine whether the question is active or not. So that administrators enable to activate or non-activate a SIT, topic or question.

## 5.0 CONCLUSION & SUGGESTION

### 5.1. Conclusion

It can be concluded that the Chatbot application is able to assist students of Informatics study program in getting information both as part of students and alumni through utilizing the role of a Chatbot as a medium of integrated delivering messages. For academics, it can also provide solutions for what students need. Besides, the Chatbot application is quite easy for students of Informatics study programs.

### 5.2. Suggestion

1. It needs further research related to the use of Chatbot application for all aspects of academic divisions.
2. It needs an involvement of related parties to improve the existing Chatbot application to perform better in serving students and academics.

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