Development Of Conversational Agent To Enhance Learning Experience: Case Study In Pre University.

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Abstract: Chatbot is an artificial intelligent application that can converse with a user through textual or auditory method. The chatbot can give a response according to their characteristic and domain knowledge. This study aims to evaluate the use of chatbot named eLVA among students at the Centre for Pre University Studies. A series of 10 questions was distributed to 40 students to evaluate the use of eLVA after they have experienced it. The results indicated that chatbot are most likely to be very helpful in teaching and learning because it has helped students getting an instant response. However, results showed that the main reason for students to stop using chatbot involved getting incorrect information and worried about Chatbot making mistakes. The result further show that there is no significant difference in the use of eLVa between male and female students. The study also found that there is no significant correlation between study program (Physical Sciences/Life Sciences) towards the use of eLVA.

Index Terms: NLP; NLU; Response Generation method; Chatbot

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1 INTRODUCTION

Chatbot's application have boomed during the past few years with the presence of Siri, Alexa, Microsoft Cortana, and many more that attract the attention of the user towards chatbot's topic. Chatbot is basically an Artificial Intelligence (AI) application that conduct a conversation via auditory or textual method [1] and be enable a person to ask question in the similar manner that they would address a human being [2].

Fig. 1. *Chatbot's Taxonomy*
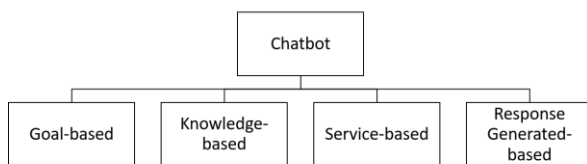
A chatbot can be categorized as four main characteristics which are Goal-based, Knowledge-based, Service-based, and Response generated based [3]. Goal-based chatbot are classified based on the aim of the chatbot. Goal-based chatbot can be based on informational, or task-based where the chatbot need to accomplish a task based on the user request. Knowledge- based chatbots are classified based on the type of the domain knowledge they accessed. It could be open-domain or closed domain. An open domain chatbot can talk and respond appropriately to an open topic. A closed domain chatbot focuses on specific knowledge and may fail to answer an unrelated

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question. Service-based chatbot can be classified based on the task it can accomplished per user request. It could be interpersonal, intrapersonal, or inter-agent [4]. Interpersonal usually provide service to user, intrapersonal usually exist within the personal domain of the user, and inter-agent usually involving two communication system such as IOT. As for Response generated, it is classified based on the method of processing input and generating response [4]. Retrieval-based methods retrieve response candidates from a pre-built index, rank the candidates, and select a reply from the top ranked one [5]. Generation-based methods leverage natural language generation (NLG) techniques to respond to a message [6][7]. The ascent of chatbot has been influenced by the growth of Natural Language Processing (NLP) area where a lot of techniques has been discovered and enhanced to ensure the capability of chatbot to deliver an accurate and acceptable response to the user's queries.

2 PROBLEM STATEMENT

Chatbots are programmed to operate according to predefined instructions. If chatbot interact and learn more new stuff, then chatbot will get much smarter. Previously, chatbot are commonly used in e-commerce in figuring out how to automate task of answering repetitive question asking by customers such as in customer service. Therefore, extending the concept to e-Learning could mean using a chatbot for student engagement. As in learning environment, engaging with the students play important role to keep student motivate and focus into their learning in order to enhance learning outcomes of all students. Some researchers think implementing chatbot might increase engagement and enhance learning, as some students who are ashamed to ask a lecturer a question in front of their peers might prefer to talk to a software robot. On the other hand, students have a lot of the repetitive questions and they have similar type of questions regarding their subject. Considering all these reason, this project aims to improve student-learning experience through chatbot named eLVA by utilizing student profile in student databases such as in Facebook messenger.