

Research Assessment

Kavan Mehta

Ms. Whitcomb

ISM 2

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Subject: An Overview of Machine Learning in Chatbots

MLA citation(s):

Suta, Prissadang, et al. "An overview of machine learning in chatbots." *International Journal of Mechanical Engineering and Robotics Research* 9.4 (2020): 502-510.

Assessment:

Now that we are in the second semester, I have started brainstorming ideas for my Final Product. With some knowledge of natural language processing (NLP) through my Original Work, I went ahead to deeply understand one of the biggest applications of the field: Chatbots. To learn more about Chatbots that we see every day on multiple websites and even voice assistants, I found a scholarly article from the International Journal of Mechanical Engineering and Robotics Research, "An overview of machine learning in chatbots," which went over the concept of Chatbots, their history, and their outlook for the digital future.

Through the journal article, I first refreshed my memory on the functions of Chatbots, which are best described as "understanding the natural language input; generating an automatic, relevant response; and, constructing realistic and fluent natural language responses" (Suta et al. 1). Furthermore, I read about the technology and its historical advancements towards more personalized, relevant, and informal conversations rather than its beginning in giving plainly

scripted answers. This connects to my knowledge as I already know how the advancements in AI in the two decades have vastly changed the more algorithmic approaches to answering questions towards constantly learning algorithms that add new information to answer questions over time. I also gained a deeper understanding of the three main components of a Chatbot: “Natural Language Understanding to categorize the user’s intent, Dialogue Management to determine the user’s intent, and Natural Language Generation to generate a response in natural language” (Suta et al. 3). I think this has helped me clarify my understanding and I am excited to understand how this works on a deeper level in terms of machine learning that is used! My Original Work projects already explore text classification and machine translation, which are very crucial to understanding the user’s intent as we focus on the purpose of the text. I hope to utilize the projects to explore Chatbots on a technical level in order to decide if I want to create a Chatbot for my ISM 2 Final Product. Additionally, I discovered the main problems that Chatbots need to tackle to save time for businesses in e-commerce efficiently and enable user interactions that help improve customer service and assist customers effectively. Currently, there is a need for a “relevant, personalized response using natural language” for each customer, which can only be accomplished with responses that are “grammatically correct and exhibit human-like behaviors and emotions” (Suta et al. 3). Furthermore, it was really interesting that we can use informal writing styles and truly understand the context to provide the feelings of empathy to a user who has an emotional response during a conversation with a Chatbot. To accomplish this, we need to continuously improve our NLP models in handling conversations that they are not formally trained on and mimic the text styles of the user to provide a response using similar language. This significantly interests me as we need to help NLP models become way more human than

ever before to help solve such a critical issue of handling customer queries or even regular conversations with voice assistants in a timely and natural manner.

By learning about Chatbots, I want to explore some possible solutions to improving the Chatbot's style to a natural nature that we would expect from a human. This could be groundbreaking in assisting us efficiently, saving millions of hours and dollars. I hope to continue to learn about other possible ideas I could use to utilize NLP technology to solve real-world problems. Moreover, during the process of finding Final Product ideas and finding my mentor, I hope to talk to professionals about possible applications that I could focus on during my research this semester!