

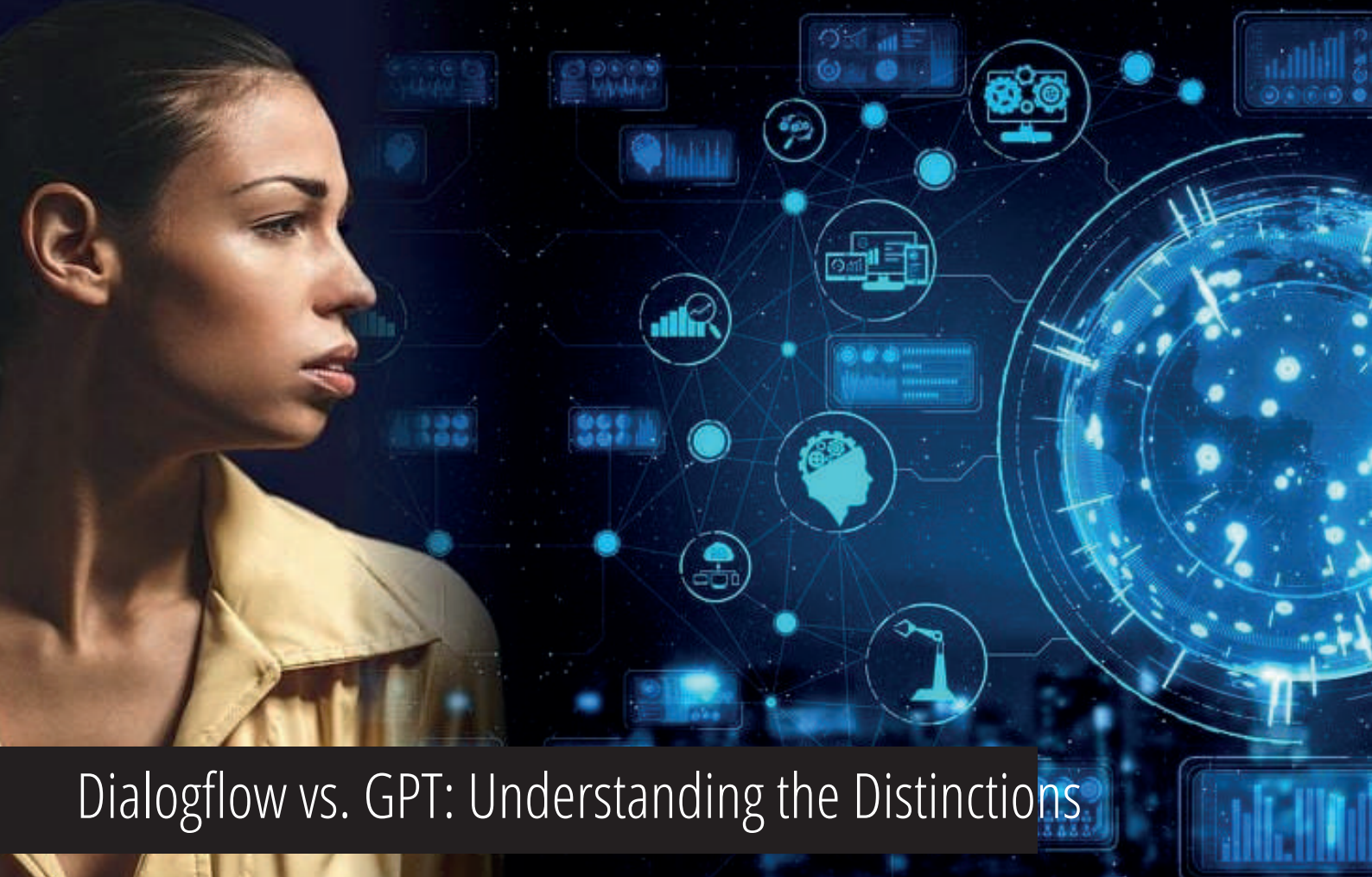


#4: Updates from
the E+DIETing_LAB:

Unravelling Dialogflow's Role in Dietetic Patient Simulations

Since the release of ChatGPT in November 2022, AI has captured widespread attention in the public domain. For dietetic students, teachers and working dietitians, this surge in AI discussions can sometimes feel overwhelming and confusing, particularly as AI adoption in dietetics remains relatively limited (1). With technical jargon and a myriad of AI models to consider, navigating the AI landscape can be daunting. Understanding the various technologies that fall under the umbrella term of "AI" is crucial to removing some of the confusion and unlocking the true potential of these useful tools.

At the core of the E+Dieting_Lab project lies the creation of a patient simulator for dietetic education powered by **Dialogflow**—an AI platform developed by Google. In this article, we shed light on the unique features that make Dialogflow an ideal choice for our innovative project and how it differs from models like GPT. We also look at the workings of Dialogflow, exploring its application in crafting our patient simulator and discuss our next steps in the project.



Dialogflow vs. GPT: Understanding the Distinctions

With the huge surge of interest in ChatGPT and concerns about its accuracy and reliability in the context of healthcare ([2](#), [3](#)), it is important to understand how Dialogflow works in some fundamentally different ways.

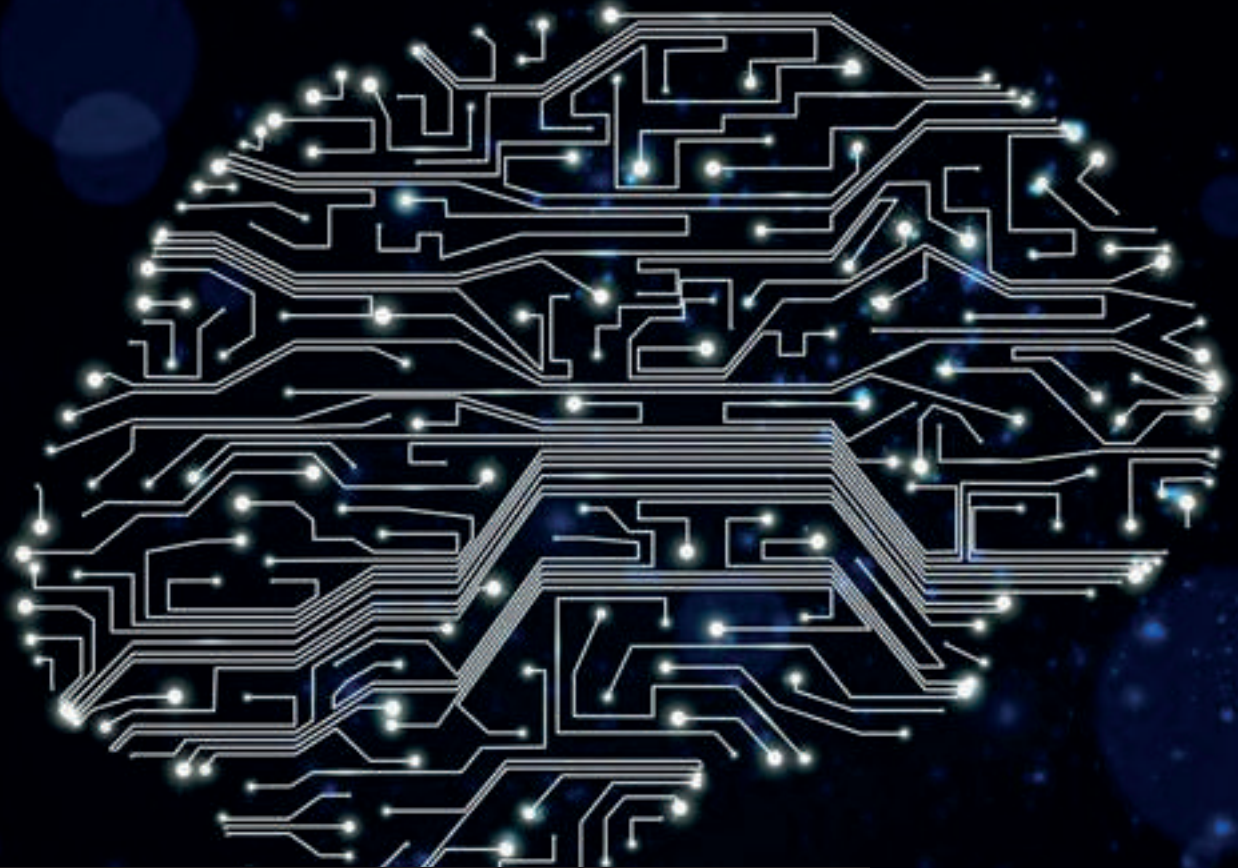
While both ChatGPT and Dialogflow are both AI platforms they have distinctly different ways of interacting with users and generating answers to questions.

ChatGPT or “Chat Generative Pre-trained transformer” is what is known as a large language model (LLM). It can understand and generate natural language in order to interact with a user. To generate answers to user questions, GPT is trained on huge volumes of data from the internet. It then uses predictive models to creatively generate an answer or interaction with a user. This creativity is what can make interacting with ChatGPT feel very human-like and enable continuous, open-ended conversations but is also what leads to inaccurate information that sounds very plausible. There is also limited ability to control or predict what ChatGPT will answer to any given user query.

Dialogflow also uses natural language processing to understand the intent of a user’s query. However, unlike ChatGPT, the answers are predefined by the creator of the Chatbot. This means that it is more suitable to specific tasks, such as a patient simulation, and there is no risk of the Chatbot providing incorrect

data as there is no generative creation of information. This is important for ensuring accuracy in the training and evaluation of dietetic student interactions with the Chatbot.

However, this limited creativity can also impact the realism of the interaction with the patient avatar and can make it difficult for the bot to handle more ambiguous user questions. These limitations can be mitigated by training and also combining AI models.



Dialogflow in Action: Creating the Patient Simulator

The primary goal of our patient simulator is to provide dietetic students with an opportunity to practice taking a patient's history. To achieve this, we designed five dietetic case studies covering various conditions like diabetes, coeliac disease, obesity, and renal disease. Based on these cases, we crafted a set of questions and answers that simulate interactions between a dietitian and a patient during a consultation.

With this information we used Dialogflow to set up the chatbot that underlies the patient simulation. The process involves creating "intents" that are matched to user input. For instance, the intent could be a question like "what do you usually

eat for breakfast," and the answer is given to the bot based on our developed case studies. We anticipate that users may ask this question in different ways, such as "what is your first meal of the day?" or "what do you eat first thing in the morning." During the "training" phase, the bot learns to recognize various ways people might ask the same question, enabling a more natural interaction between the user and the simulated patient.

It is important to perform extensive testing to ensure the chatbot has been given enough information to respond appropriately to a user's question. This includes understanding the users intent and the correct context. For example, if the "patient" tells the user they drink coffee with breakfast, the user may ask follow up questions about type and quantity of milk added. The bot needs to have answers to these questions and understand the question is being asked in the context of breakfast coffee and not another meal.



The Road Ahead: Testing and Validation

As we venture into the next phase of our E+Dieting_Lab project, our objective is to test and validate the capabilities of our chat bot in delivering accurate and contextually relevant responses.

We will conduct iterative testing of the current prototype with students, teachers and dietitians from the partner universities in the upcoming semester. As each case is tested and participants give feedback the chatbot will be fine-tuned to ensure that it is able to understand users questions during an assessment and provide the correct answers.

One challenge is the multi-language nature of the project, the bot needs to understand and correctly provide information in English, Spanish, Portuguese, Polish, Dutch and German. Additionally, different countries follow different dietetic processes and procedures. Therefore, it can be difficult to ensure the bot understand the intent and context of a user's question from dietitians and students from all the partner countries.

The testing phase of the project will provide useful feedback and enable us to overcome these challenges. The project partners will meet in late September at the Artesis Plantijn University of Applied Sciences in Antwerp to discuss the early testing results and plan the next phases of the project. Stay tuned for more updates!

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