**Artificial Intelligence Essentials: AI-based Chatbots**

Course Overview

Hi, everyone. My name is Dayo Bamikole, and welcome to my course on Artificial Intelligence Essentials focused on AI‑based chatbots. I'm a Cloud Sales executive at Microsoft. So chatbots have become a tool that we see quite often on our day to day. It's the first thing you see on the website asking you if you need help. Its the new artificial tool you've heard of as ChatGPT. You might also see the that there are levels to the different chatbots you interact with. Some of these differences vary based on how smart the chatbot is, how much information it remembers about you, and much more. In this course, we're going to go through the foundational knowledge of AI‑based chatbots. We do this by evaluating wh

at an AI‑based chatbot is. We'll get an understanding of it. We'll also go through some applications of it, as well as going through what tools are available to create an AI chatbot. By the end of this course, you'll understand what an AI chatbot is, how to identify one, and how to differentiate it from a regular chatbot. From here, you can continue your learning by diving into other courses in the Artificial Intelligence skills path, courses like Artificial Intelligence Essentials: Key Concepts and Getting Started with Artificial Intelligence for Business. I hope you'll join me on this journey to learn about AI‑based chatbots, here at Pluralsight.

Evaluating AI Based Chatbots

Introduction

Hi. Welcome to the Pluralsight course on AI‑based chatbots. My name is Dayo Bamikole, and I'm a Cloud Sales executive at Microsoft. In this module, we're going to go through how to evaluate AI‑based chatbots. We'll do this by understanding what a chatbot is, what an AI chatbot is, what the differences are between both of them. And since we're going to focus on AI chatbots, we're going to go through some examples. Let's go ahead and get started.

What is a Chatbot?

So let's start by defining a chatbot. So what is a chatbot? A chatbot is a machine that makes conversation with a person mainly via text or speech. So now that we know what chatbots are, why are they needed? Let's look at an example. We have Stacy here, and she runs a gift delivery business called Gift on the Go. She typically takes client orders over the phone. And during the holidays, she realizes she's missing calls because she's so busy attending to other areas of the business. As a result of missing calls, she's missing orders, and even if they leave a voicemail, it's not always very clear what the order is. So what does she do? She decides to meet with a business consultant, and this business consultant suggests to her that you might need a chatbot for your customers. So she asks, how will the chatbot help Gift on the Go? So the consultant lets her know a chatbot can be helpful because so many people have a smartphone today, and the way to find out about Gift on the Go is from apps like Google, Yelp, and social media, so things like Instagram, TikTok, and so on. And the thing is that most of these apps link to the website. So when they land on Gift on the Go's website home page, a chatbot will be a perfect place to have customers place an order. So, some of the benefits of this would be that a chatbot will be available 24/7. So this would be a guaranteed way to always accept orders. Another benefit would be that a chatbot can be a great way to easily gather data about Gift on the Go's customers, so things like email, what time of the day they like to place their orders, and other useful data that can be used to target towards Gift on the Go's business in the future. So by this point, Stacy's interest in chatbot has been piqued. So now what was left was for the consultant to show her a demo of how this would work. So it looks something like this. You start with a typical greeting. Hey, my name is Gifty, a nice name for a chatbot. The customer says hi. The bot will respond by saying, hey, I'd like to help you place an order and goes ahead and gives some options that most customers will find helpful like looking through the gift catalog, placing an order, going straight to placing an order or checking on a previous order to see the status. So stepping out of the role between Stacy, the owner of Gift on the Go, and the consultant, I hope you've been able to understand what a chatbot is, why it's important for so many different reasons for things like business owners, and also what are some of the main benefits. In the next video, let's go ahead and see what are the different types of chatbots.

Types of Chatbots

To understand chatbots a bit more, let's take a look at what types of chatbots we have. There are two types of chatbots. We have rule‑based chatbots and AI‑based chatbots. You can think of the rule‑based chatbot as a decision tree. Another way to think of this is the if this, then that scenario. Essentially what this means is that there are pre‑configured outcomes to your responses, and if you stray outside of these parameters, you'll get no result. Contrast that with the AI‑based chatbot. This is a contextual chatbot that will first understand what the user typed, then give you a response based on the large amount of information it's gained from other conversation and just its access to large amounts of data. Let's dive a bit more into the differences between both of these chatbots. Like I mentioned earlier, rule‑based chatbot is based on if/then rules. It's also limited to user input, meaning you can only type in what the bot wants you to type in. This is because the conversation flow is preprogrammed to specific inputs that you're allowed to put in. It also cannot detect synonyms, so you need to make sure you do not substitute words because it will not pick it up. So comparing this to the chatbot that we're going to be focusing on for the rest of this course, AI chatbots. AI chatbot uses natural language processing, also known as NLP, and It uses this to understand what has been typed into the chatbot. This allows you to type questions freely. And because of this, the AI chatbot can learn from the interactions with its users and increase its ability to understand intent when a question is asked. In the next video, we're going to look at some examples of AI chatbots.

Examples of AI Based Chatbots

Now that we understand AI chatbots a bit better, let's talk through some examples. First, we have business virtual agents. An example of this is Bank of America's Erica chatbot, and this is used to keep up with your finances. You can do things like check your balance. It can also alert you of account changes and charges like duplicate charges, recurring charges, and much more. Another example is the Amtrak bot called Julie. This bot can help you book real travel by asking where and when you'd like to travel. It's also capable of making hotel and rental car reservations, and it can also alert you on what can be carried and much more. You've probably also heard of Domino's Pizza, and they have a chatbot called Dom, and Dom can help you place a new order for pizza or track an existing order. And this sounds very similar to Stacy's Gift on the Go chatbot idea that her business consultant mentioned earlier in this module. Another capability of Domino's Dom chatbot is the ability for it to reorder your previous orders. That's a pretty neat feature. Apart from virtual assistants, another example of AI chatbots are digital assistants, and some of these assistants you probably hear of every day. We have them in our smartphones like Apple Siri, Google's Google Assistant, and Amazon's Alexa. These digital assistants perform a number of tasks like set reminders, check on traffic, map your way to a location, send a message, and much more. Another example of this that you probably don't think of as a digital assistant, but its taking over the chatbot space by storm is OpenAI's ChatGPT. While it isn't built into your phone like some of these other ones that I mentioned earlier, it has some similar capabilities like being able to get assistance in your day‑to‑day tasks. These different digital assistants are able to perform these tasks by being trained on numerous amounts of data, as well as human feedback, also known as reinforcement learning.

Conclusion

This brings us to the end of our first module. Let's take a look at what we've learned so far in this course. We started by going through a definition of what a chatbot is, we then got an understanding of what the different types of chatbots are like rule‑based chatbots and AI‑based chatbots. And since the focus of this course is going to be on AI‑based chatbots, we decided to go through some examples. In the next module, we'll dive in a bit deeper by getting an understanding of what chatbots are and what they're made of. I'll see you in the next module.

Understanding AI Based Chatbots

Introduction

Hi. Welcome to the Pluralsight course on AI‑based chatbots. My name is Dayo Bamikole, and I'm a Cloud Sales executive at Microsoft. In this module, we're going to go through the components of an AI chatbot, what natural language processing is, and also understanding what intent is. Let's get started.

Components of an AI Chatbot

So what are the components of an AI chatbot? AI chatbots are able to understand what users type through something called natural language processing, also known as NLP, and then it's able to respond by using something called machine learning, also known as ML. These are the two components of an AI‑based chatbot. In the next videos, we'll dive in a bit deeper into these components.

What Is Natural Language Processing?

So what is natural language processing? When we think of chatbots, we tend to think of typing in our own languages and the chatbot responding in the same language. So if you understand English, you type in English, and the bot responds back to you in English. But with AI chatbots, it's a bit more intelligent to be able to decipher one language from the other. Let's look at an example of this with ChatGPT. You can access this by going into chat.openai.com. So over here, I'm going to type in Hi, and as you see, it responds in English. It says, Hello! How can I help you? I could take this a bit further and type in Hola! And Hola, as you know is in Spanish, and it responds, what can I help you with today? I then go ahead and type in a greeting in German as well, and it also responds by saying, how can I help you today? Same idea in French, and I also get a response saying how can I help you today? And last, let's type it in Chinese. I'll say nin hao. And as you see, it responds back. And for this one, I actually do not know what it means, but I can tell it to translate it back. And as you see here, it says Hello! How can I help you today? I show all these different examples to show you what natural language processing looks like in an AI‑based chatbot. So now that we've seen NLP in action, let's go into a little bit more understanding of what it is. NLP is a branch of AI that gives computers the ability to read, understand, and also derive meaning from human languages. And it goes a little further than just translating one language to another. We also use it in our day to day with features like auto correct and citation checkers. As you can see, this is a very critical component of an AI‑based chatbot. We also see this when we talk to our digital assistants like Amazon Alexa and Google Assistant just by speaking it to be able to understand what words are coming out of your mouth, what language you're speaking, and understanding to respond back in that same language.

What Is a Knowledge Base?

Before we talk about knowledge base, let's talk through the other components of an AI chatbot, which is machine learning, also known as ML. ML is a branch of artificial intelligence that uses data and algorithms to imitate humans' ability to learn. It's able to do this without being programmed. So, once a model is created, the process of ML becomes iterative. So with chatbots, an AI chatbot becomes smarter the more information is provided to it, and this is because it's able to learn over time from its collection of data. So the process of doing all of this is known as creating a knowledge base. So relating this whole data collection process to real life, in our last video with ChatGPT, you'll notice that after every response, there's an option to select thumbs up or thumbs down, and you also notice that the very last sentence in the chatbot says, Your feedback will help us improve. So it's safe to say that our interaction with ChatGPT's response will help to make it a smarter chatbot. So going back to knowledge bases, let's talk a bit more about what they are. A knowledge base merges the benefits of natural language processing and machine learning to learn from previous conversations. With this knowledge, it's able to understand slangs, analyze emotions, and also perform a wide range of tasks. So so far, we've talked about a few different aspects of AI chatbots. Let's try to bring it all together in a diagram of what an AI chatbot looks like. So we have the knowledge base. And, of course, a chatbot has a location where it's storing its interaction history and analytics. And as we know, NLP plays a huge part on how we're able to understand what is being said, so all of this feeds into what we see on the chatbot. Now let's head into the next video where we're going to talk about intent.

Understanding Intent

Apart from natural language processing, machine learning, and knowledge bases, a very key important aspect of an AI chatbot is the ability to understand intent. So what is intent? So this refers to the goal that the user has in mind, whether typing or speaking. We saw this in our interaction with ChatGPT earlier. We said hello in Chinese, and then it responded back. And due to my limited knowledge, I told it to translate it in English. But when I said translate to English, I did not have to give it context or explain what I wanted to translate in English. I simply said translate in English. This means the bot understood the intent of my question. It wasn't lost, and it also did not ask me what to translate to English. This is a great example of intent. You're also seeing the image of the screen where the user says send an invite, and it automatically understands send an invite to Aaron because that's who the user asked about earlier. Without intent, we will continually have to repeat the entire context of our message, which can become very wordy and a mouthful to type or speak. Imagine if you had a friend that never remembered anything and you always had to repeat every single thing that you said before. They might not stay your friend for too long. Well, I hope that gives you a good understanding of what intent is and how useful and valuable it is in an AI chatbot.

Conclusion

This brings us to the end of this module. Let's recap some of the highlights of this module. We discussed the components of an AI chatbot by going through natural language processing, machine learning, and we also dived into knowledge bases and got an understanding of what intent is. In the next module, we're going to go through some of the applications of AI‑based chatbots. I'll see you there.

Describing Applications of AI Based Chatbots

Introduction

Hi. Welcome to the Pluralsight course on AI‑based chatbots. My name is Dayo Bamikole, and I'm a Cloud Sales executive at Microsoft. In this module, we're going to get an understanding of the applications of AI‑based chatbots. We'll do this by going through how they're currently used today and dive in a little bit deeper by going through some industry examples. Let's get started.

Industry Use of AI Chatbots

We mentioned in module 2 some examples of AI chatbots, but what are some general use cases in our day‑to‑day lives? We see chatbots used in customer service, human resources, finance and accounting, as well as sales and marketing. For the rest of this video, let's go through some examples of these by talking through chatbot use cases in different industries. We're going to start with e‑commerce and retail. In this industry, we see chatbots being used to recommend products. We also see offering experiences based on a customer profile. And another good use case is gathering a number of feedbacks. I know this is important to me because I know with humans, you sometimes aren't sure if your feedback will make it up to the right person. So moving on to the financial services industry, you can see a chatbot being used to personalize finances like letting you know what ways you can save based on spending habits. You can also automate customer support and improve payment processing. For the insurance industry, you can automate getting a quote, as well as purchasing a policy, managing a claim, and policy renewals. For the manufacturing industry, you can check on the status of supplies, handle floor queries, automate delivery systems, and product recommendations. For the health care industry, you can assist in scheduling appointments, answering insurance questions, and collect feedback. For the health care industry, assist in scheduling an appointment would be a big plus because it would remove having to call the front desk every time you needed to see a doctor. And for education, you can have a chatbot stand in as a teacher's assistant or even a virtual personal tutor. I hope with these different examples, you start to have ideas of how you can use an AI chatbot to improve your business efficiencies and better meet your goals within your industry. In the next video, we're going to take a look at a demo using an AI chatbot in the customer service industry.

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Demo: Retail Chatbot

So over here, I am on the Domino's website, and you can visit the chat section by going to dominos.com/chat‑pizza‑order. I'll start by giving a simple greeting. I'll just say Hi. I can even alternate the way I say it. I could say Hello instead, and I still get the same result. So we have a little bit of flexibility on how we interact with the chatbot. I can then go and say, hey, I just want to order. I'll just type in Order and see what it says. And you can see, it interacts with me and says Awesome! Do you want to place your Easy Order, most recent order or a new order? If you select the Most Recent Order option, it's going to ask you to sign in. I do not want to sign in, so I'm just going to say New Order, and it's going to ask if I want to do Delivery or Carryout. I'll do Carryout and then Continue as Guest. It's going to ask for a phone number. I'm going to give it a fictitious number, 5552458000. Now it's trying to figure out which store I want to go to. I will go ahead and type in a zip code. And shout out to my Boston folks. This is a Boston zip code, and I would select a store. And from here, I can place an order by just selecting the type of pizza that I want and what size. And from there, it would go ahead and ask me to check out and place it in the cart. So all of this can be done from the Domino's chatbot. As you can see, this is a great customer service option by using the chatbot. It gives the customer a lot more flexibility than having to call or even go into the store if they don't want to. They can just go in the store to pick up. And they have another page called anywhere.dominos.com, and it gives you even more options to interact with this chatbot. The chatbot's name is Dom, so you can call your Alexa or your Google or any of the different options that you use to interact and ask it to place an order for you. With all these different options, you can see the way it leverages NLP out of AI to interact with its customers and create a much better experience. I hope this gives you a good example of what some of the use cases we talked about can look like.

Conclusion

So that brings us to the end of this module. Let's take a quick recap of what we learned so far. We discussed industry examples of AI chatbots like using chatbots for product recommendation, personalized finances, managing an insurance policy, as well as automating delivery systems. And we also got to see an example of this with Domino's Dom chatbot. In the next module, we're going to get an understanding of the tools you can use to create an AI‑based chatbot.

Using Tools to Create an AI based Chatbots

Introduction V2

Hi. Welcome to the Pluralsight course on AI‑based chatbots. My name is Dayo Bamikole, and I'm a Cloud Sales executive at Microsoft. In this module, we're going to get an understanding of the tools that you can use to create an AI‑based chatbot. We'll do this by going through the ways to build an AI chatbot, as well as diving into what technologies are available for the build. Let's get started.

Tools to Built an AI Chatbot

So what options do we have available to build an AI‑based chatbot? Well, you can code your chatbot with so many different languages like Python, JavaScript, Swift, Java, and much more. However, the process of coding has been streamlined with something called an SDK, known as the software developing kit. This provides everything you need to build an app for a specific platform. And one of the things that it sometimes provides is something called an API. An API stands for application programming interface. It's used to communicate with external applications and platforms using methods and protocols. In the next video, let's go ahead and take a look at some examples for SDKs and APIs for AI chatbots.

SDK and API for AI Chatbots

So what are examples of SDKs? So here are a couple of common ones to use for chatbots. We have the Microsoft Bot Framework and Node.js. So the Microsoft Bot Framework allows developers to build and model their chatbot using the language of their choice or using the Bot Framework Composer where you can visualize your chatbot along with code behind it. Node.js is a cross‑platform, open‑source server with a JavaScript back end that makes it easy for developers to use JavaScript for code. There are many bots that use Node. js as an SDK to build their chatbot solution. Examples of this are Google Cloud's Dialogflow and ChatterBot. Now let's talk about what API options we have for AI‑based chatbots. We have Google Chat's API, which lets you communicate over chat and allows you to integrate with tools like Gmail, Maps, YouTube, and other Google applications all this while allowing your chatbot to answer questions quickly with data‑backed resources. Next, we have Facebook Messenger API, which allows you to use Facebook Messenger to answer real‑time questions and perform actions that are requested in the comment box. We also have Bing API, which lets you search from billions of web documents on the web by using Bing's capability to comb through billions of images, videos, web pages, and much more through a single API call. And another option we have is OpenAI's API. We showed OpenAI's ChatGPT earlier in this course. And OpenAI's API allows you to access ChatGPT by translating natural language tasks to code. In the next video, let's take a quick look on how to use OpenAI's API with code.

Demo: Using ChatGPT with OpenAI API via Code

So let's take a look at how we can use OpenAI's API to run ChatGPT with code. I'm in a Python notebook, and you can access this by going to the link below. Once you're there, create a new notebook, or you can import the one that I have in the exercise files. The first step in the notebook will be to install the OpenAI package. I'll go ahead and run it. And you should see it runs pretty fast because I already have it installed. Then you will be required to import the newly installed package with the code import openai, and the next line will require you to grab a secret key from OpenAI's website. You can do so by following this link, and it's going to prompt you to sign in to get one. The site looks like this, and you will press Create new secret key to get a key. I will not press this button because I already have a couple. And once you have a key, you can head back into the Python notebook and paste it where it says your key. I'll pause this video to run the cell with my secret key. Now the last cell is where we call upon the OpenAI API and ask it a question. I'm going to ask it who the top NBA players are of all time. And here we go. This list might cause some debates, but nevertheless, we are able to communicate with ChatGPT via OpenAI's API. For a developer looking to build an application, you can easily incorporate OpenAI's ChatGPT into your chatbot. Feel free to ask it other questions and see how it responds.

AI Chatbot Builders

Now let's talk through AI chat builders. This is another option we can use for AI chatbots. It's a great option for someone that does not want to write code. The first option that comes to mind is Azure Cognitive Service, and this is a pre‑built AI solution that calls AIs through APIs. And I'm sure by now you guys should be familiar with APIs from the previous video. And it's interesting to know that Azure Cognitive Service is not just for chatbot builders. It also has APIs for other capabilities like search, object detection, speech to text, and much more. And you can argue that some of these capabilities are useful, even in a chatbot. You can check out Azure Cognitive Services from the link below. But the one Azure Cognitive Services that helps with AI chatbot is called question answering. It allows you to create a knowledge base by adding unstructured documents or extracting questions from semi‑structured content like FAQs, manuals, documents, and much more. And because of its AI capability, it gets smart over time by learning from its user's behavior. And apart from Azure Cognitive Services, there are other chatbot builder options like Tidio, MobileMonkey, Botsify, and Microsoft's Power Virtual Agent. Companies like these are able to leverage the power of millions of real‑life conversations to train their intense recognition system. And with this, you can create an AI chatbot in just minutes. Here's an example of what a Power Virtual Agent chatbot builder looks like. As you can see, you can drag and drop questions. And to answer the question, you can create multiple conditions for it to look through to answer its users, a pretty easy way to build a chatbot if you're not a coder. In the next video, we're going to circle back to the Azure Cognitive Services question answering AI solution. I'll see you there.

Demo: AI Chatbot with Azure Cognitive Question Answering

In this demo, we're going to head over into the question answering website. You can use the link below to get to the website. On the page, you can start by creating a new project. And on the top here, you see you need to have an Azure subscription already created to get this set up and running. You can just go to portal.azure.com to get a subscription. Go ahead and give your chatbot a name, select the language that you want, which will be English in our case. Press Next and Create project. Next thing we're going to do is create a knowledge base. And at the bottom here, you can see the different formats that are supported for a knowledge base. To create the knowledge base, go up to Add source, and we're going to select URLs. I'm going name mine as NBA FAQs, and I already have the link that I want to use open already, and this is going to be the NBA FAQs website, frequently asked questions. I'll grab the link and paste it over in where it says URL. Press Add all, and it's going to add the URL into our knowledge base. It takes a few minutes. You might get a few pop‑ups. I'm just going press Got it, and it's going to go away. Go ahead and click on the knowledge base, and you can see here that all the questions from the website has been imported into this page. And now we can test this chatbot to see if it's able to answer any questions that we've got. Like in the previous demo, I'm going to ask who are the top NBA players of all time? And I'm hoping that this NBA FAQ has the answer to that question. And as we see, it does. It mentions some of the similar players that we saw last time like Michael Jordan, Bill Russell, Kareem Abdul‑Jabbar, and much more. We can inspect this question that we asked, and we can see how confident it is in the answer that it gave. We can see here it has a confidence score of 93%. And it shows some other options that's the answers it could've given, but it wasn't so confident about. This is where you can train your bot to give a different answer in the future. I hope this gives a good understanding of how you can quickly create an AI chatbot by using the Azure Cognitive Services question answering solution.

Conclusion

This brings us to the end of this course. Let's take a look at what we've learned so far. We started off by getting an understanding of chatbots by going through the different types of chatbots there are like rule‑based chatbots and AI‑based chatbots. We then dug a little further by going through examples of AI‑based chatbots, and we got a bit more understanding of AI chatbots by going through the components of it like natural language processing, machine learning, knowledge bases, and got an understanding of what intent is. After this, we went over some industry examples of AI‑based chatbots. An example of this is the customer service industry. We got to see a demo of what that looks like with the Domino's bot. We then got to see some of the options available to build a chatbot like code, SDK or APIs, and we also got to see the option of using a chatbot builder. I hope this course has given you a better understanding of AI chatbots, what they are, and how to use them. Thank you for taking this course, and I hope to catch you in the next one.