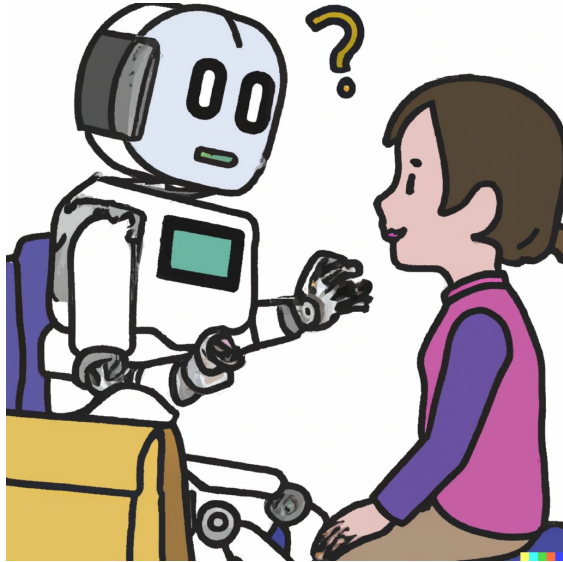




# Build Conversational AI using GPT-4

Utilize Generative AI capabilities to deliver a magical end-user experience



## Course Outline

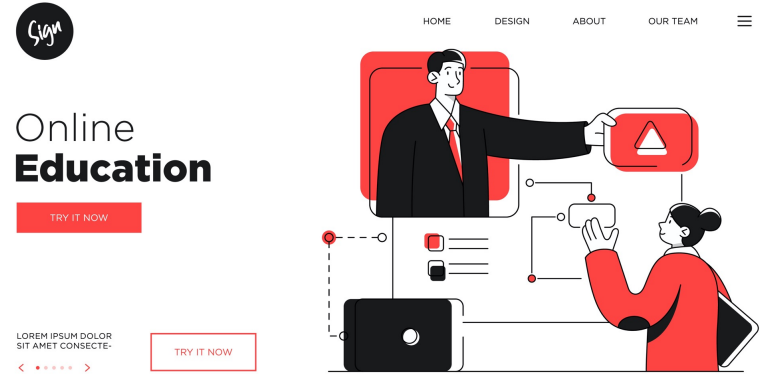




# Introduction to the Course

## Course Outline

### 1. Introduction





# Introduction to the Course

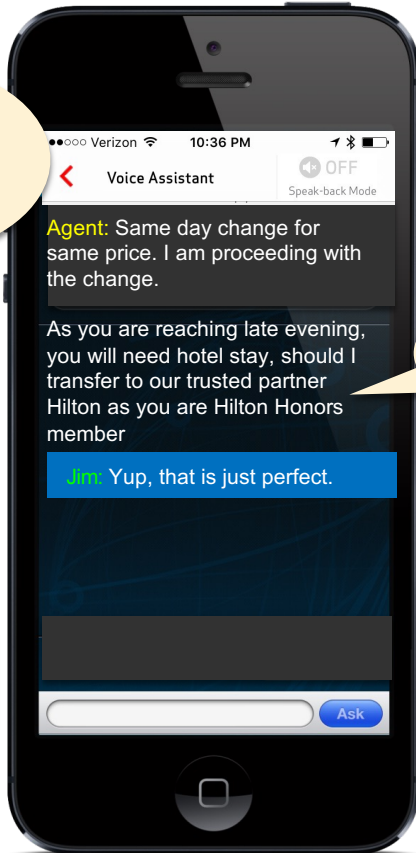
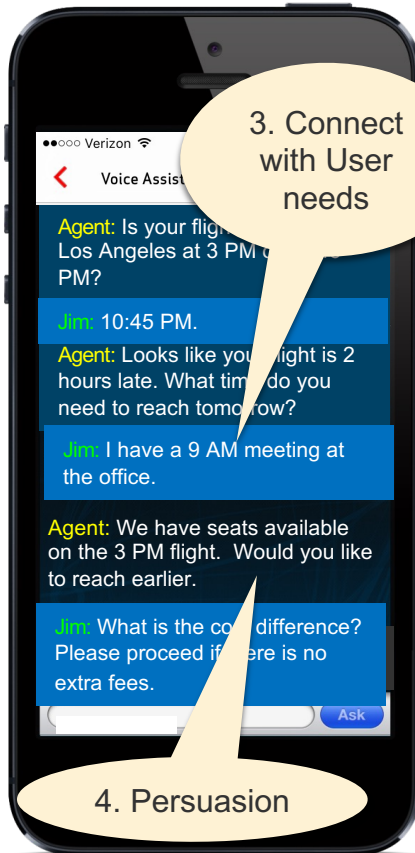
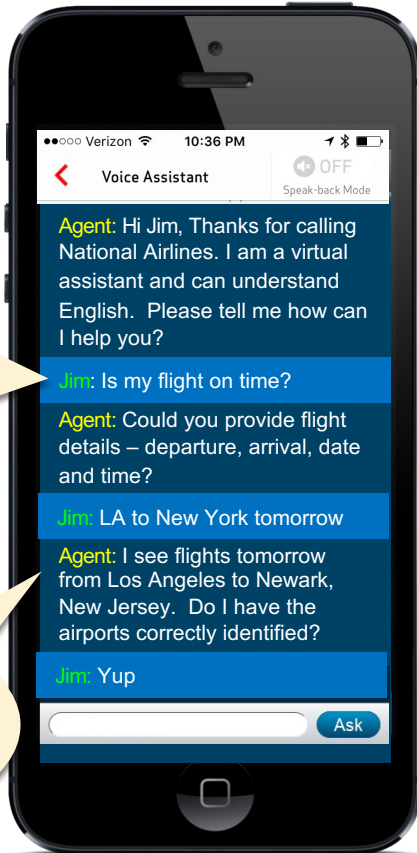
## Course Outline

1. Introduction
2. What is Conversational AI?





# What is Conversational AI – Key Concepts



1. Listening and Comprehension

2. Knowledge of Subject area

3. Connect with User needs

4. Persuasion

5. Trusting relationship



# Introduction to the Course

## Course Outline

1. Introduction
2. What is Conversational AI?
3. Set up Development Environment



# Set up Environment

## OpenAI Setup

1. Create OpenAI Account

2. Get secret-key

3. Set up config.json

## Python Setup

4. Install OpenAI SDK

5. Import Python Library

6. Assign secret-key



# Test Development Environment

## Test Steps

### GPT-4 Build

1. Create GPT-4 conversation

2. Run GPT-4 API

3. Print GPT-4 results

### DALL-E 2 Build

4. Create **DALL-E 2** prompt

5. Run **DALL-E 2** API

6. Display results



# Introduction to the Course

## Course Outline

1. Introduction
2. What is Conversational AI
3. Set up Development Environment
4. Generative AI – Solution Components





# Conversational AI – Key Concepts

## Intent & Utterances

Intent	Utterances
Affirmation	“Yes”, “Yep”, “Ok”, “I agree”, “I confirm”, “Absolutely”, “Sure”, “Roger”, “😊”, “I suppose so”

## Context

Statement	Context
LA to New York tomorrow	If today is Jan 3rd, we are talking about flight on Jan 4 <sup>th</sup>

## Short tail

Questions most frequently asked

## Entity

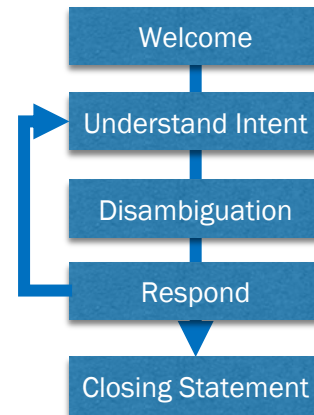
Utterance	Entity	Value
I would like to buy a shirt	Item	shirt

## Dialog

Dialog in a conversation determines how sentences are sequenced.

## Long tail

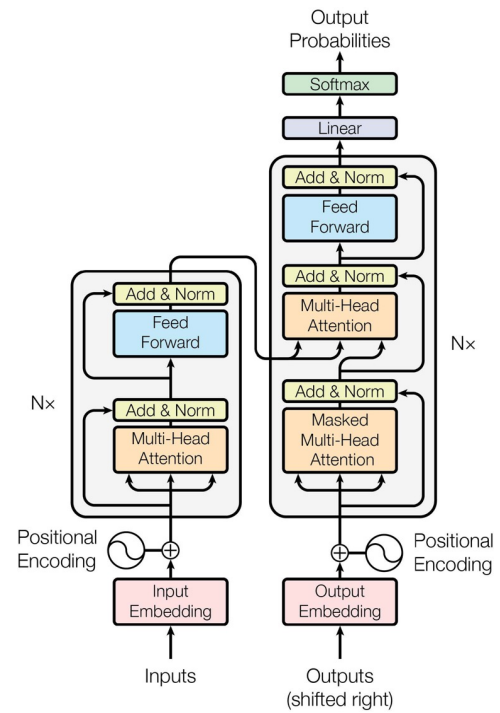
Questions very infrequently asked



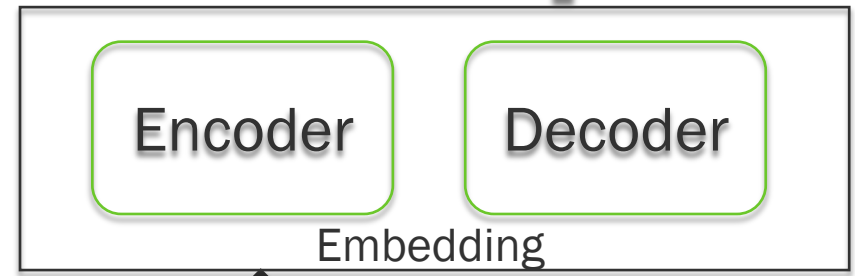
# Generative AI – Key Concepts



What are the components of a transformer?



Response: GPT is an AI language mode based on transformer architecture.



Question: What is GPT in one sentence?



# Generative AI - Solution

User



Custom Use Cases

Embeddings

Intents

Entities

Response Generation

Recommendation Engine

Custom Database

GPT3.5<sub>API</sub>

ChatGPT<sub>API</sub>

Mod<sub>API</sub>



Models

GPT 4<sub>API</sub>

DALL-E<sub>API</sub>

Whisper<sub>API</sub>



# Introduction to the Course

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# Movie Recommendation Use Case

## Short Tail:

- How many genres do you have?
- How many movies are there in your database?
- How many action movies do you have?
- Can you recommend a 1990s action movie?
- Can you provide movie details for Toy Story 2?

## Long Tail:

- Can you recommend a classic that won Oscar for original screenplay



# Movie Recommendation Design using ChatGPT

No	Intent	Intent-training-set
1	genre-count	How many Genres do you have
2	movie-count-by-genre	How many action movies do you have
3	recommend-a-movie	Can you recommend a 1990s action movie
4	provide-movie-details	Can you provide Toy Story movie details

No	Entity	Entity-training-set
1	Movie	Toy Story
2	Genre	Action
3	Decade	1990s

## Prompt Engineering Examples

Example: How many Genres do you have -> Intent: genre-count

Example: How many action movies do you have -> Intent: movie-count-by-genre

Example: Can you recommend a 1990s action movie -> Intent: recommend-a-movie

Example: Can you provide Toy Story movie details -> Intent: provide-movie-details

Query: How many horror movies do you have? What is the intent

Temperature setting - JSON vs natural language output

Print conversation log

```
for conversation in conversations:  
    print('{0}: {1}\n'.format(conversation['role'].strip(), conversation['content'].strip()))
```

system: Your role is to detect intents and extract entities in user queries. The output is a JSON which will be used to query a backend system

user: Use the following examples for intent definition

Example: How many Genres do you have -> Intent: list-of-genres

Example: How many action movies do you have -> Intent: count-movies-by-genre

Example: Can you recommend a 1990s action movie -> Intent: recommend-movie-by-decade

Example: Can you provide Toy Story movie details -> Intent: provide-movie-details

Query: Do you have a 1970s action movie? Please provide the intents in JSON format {'intent': '<detected intent>'} which can be directly used in a backend query

```
assistant: {  
    "intent": "recommend-movie-by-decade",  
    "entities": {  
        "decade": "1970s",  
        "genre": "action"  
    }  
}
```

JSON containing intent

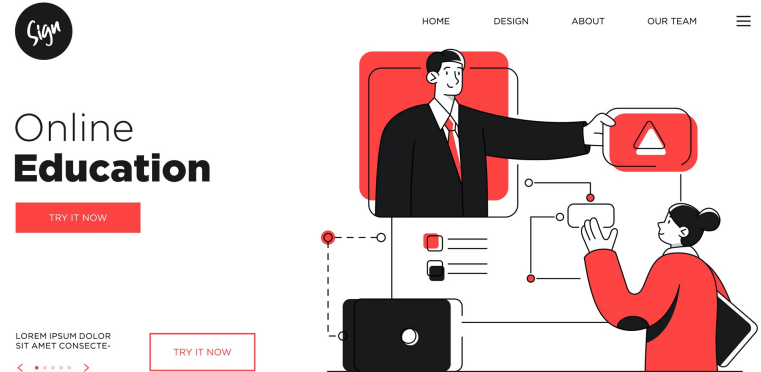
- 1) Create a Backend Function to call your database in response to a structured query
- 2) From unstructured query, detect its intent
- 3) Extract entities from unstructured query
- 4) Formulate backend query using its structured inputs using intents and entities
- 5) Conduct backend query
- 6) Respond back to the user using a generative unstructured response



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6. Advanced Topics



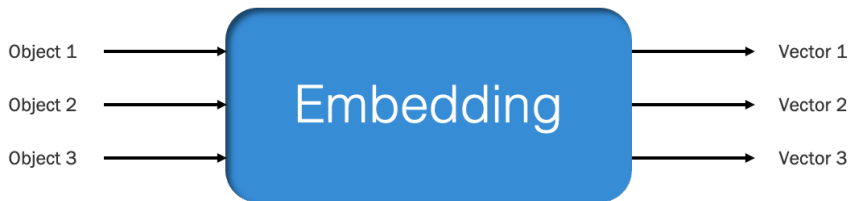
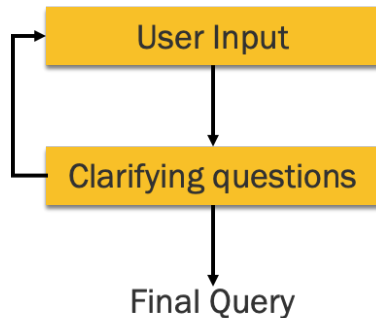


## Disambiguation

- Derived from Ambiguous – or Unclear or indistinct
- Clarification process
- Chit chat and disambiguation

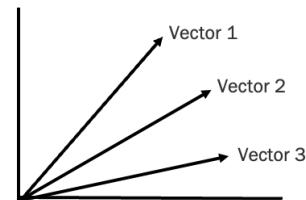
## Embedding

- User-supplied content
- User-supplied ontology



## System Chemistry

- User Persona
- Role
- Personality Traits
- How to improve Chemistry
- Design and Test Chemistry





# Chatbot Personality – Helpful & Efficient

Welcome

Confirm Bank Account

Confirm Effective Date

Thanks

Lisa: Hello Jim, how can I help you today?

Jim: Hi Lisa, I need to make an online payment. Can you assist me with that?

Lisa: Of course, Jim. Our organization offers an online payment option through a link on our website. However, it only works with ABC Bank checking accounts. Do you have a checking account with ABC Bank?

Jim: Yes, I have an account with ABC Bank.

Lisa: Great, we can proceed with the online payment using the provided weblink. Before we continue, do you have any questions about the process?

Jim: I'd like to know when the payment will be effective and if there's any charge for making an online payment.

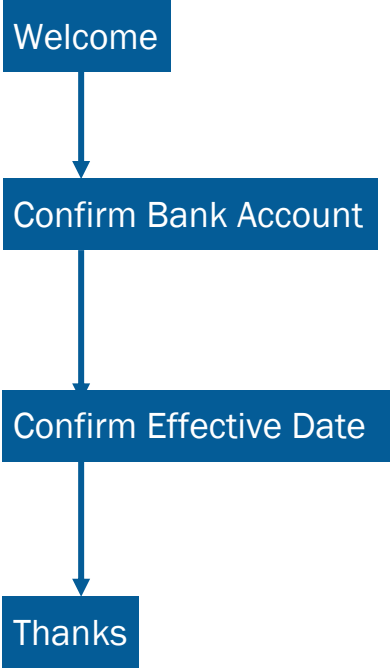
Lisa: The payment will be effective within 1-2 business days after the transaction is completed. There are no fees for online payments made through the weblink using an ABC Bank checking account.

Jim: Thanks for the information, Lisa.

Lisa: You're welcome, Jim. If you have any further questions or need assistance, please don't hesitate to ask. Have a good day.



# Chatbot Personality – Cheerful & Happy



Lisa: Hey there, Jim! 😊 How can I brighten your day by assisting you?

Jim: Hi Lisa! I'm looking to make an online payment. Can you guide me through the process?

Lisa: Absolutely, Jim! ✨ Our organization has a super-convenient online payment option right on our website. There's just one tiny detail: it works exclusively with checking accounts from ABC Bank. Happen to have one of those?

Jim: Yes, I do have an account with ABC Bank!

Lisa: Fantastic, Jim! 🎉 We can move forward with the online payment using our handy weblink. Do you have any questions before we jump right in?

Jim: Sure, I'm curious about when the payment will be effective and whether there's any charge for making an online payment.

Lisa: Great questions, Jim! Your payment will be effective in just 1-2 business days after you complete the transaction. And guess what? Our organization believes in keeping things simple, so we don't charge any fees for online payments made using the weblink with an ABC Bank checking account. 📍

Jim: Thank you for the information, Lisa.

Lisa: You're welcome, Jim! 😊 If you need any more help or have other questions, I'm right here to assist you. Have an absolutely amazing day! 🌈



# Conversational AI Use Cases

## Consumer Facing Use Cases

Shopping Agent

Hotel Concierge

Ordering Agent

Appointment Scheduler

Support Agent

Device Doctor

Billing Agent

Travel Agency

## Business Facing Use Cases

IT Help Desk

Health Insurance VoiceBot

Corporate Services Helper

Trade Desk

Channel Support

Tax Help Support

Supplier Portal

Tariff Support

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6. Advanced Topics
7. Summary

