

Building a Custom GPT Assistant for Asynchronous Student Learning

By

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Objectives

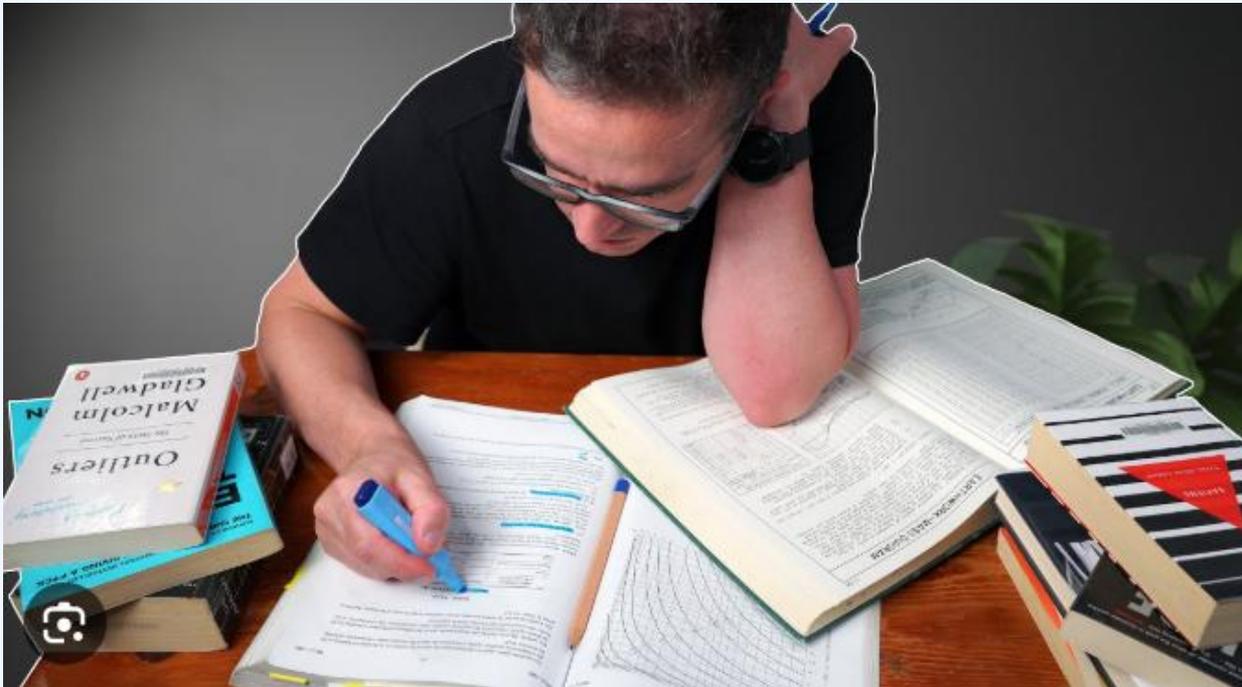
AI – Artificial Intelligence

Concept: - Background of AI-Assistant

Example:- Functioning of Custom GPT for ENGR 2300

Implementation: - Construction of ENGR2300 Tutor

Reflections: - Benefits and Shortcomings



Background of AI Assistant

Definition:

An AI Assistant is a Custom GPT that interacts with students through natural language to provide explanations, guidance, feedback, and learning support.

Key Characteristics: Available **24/7**

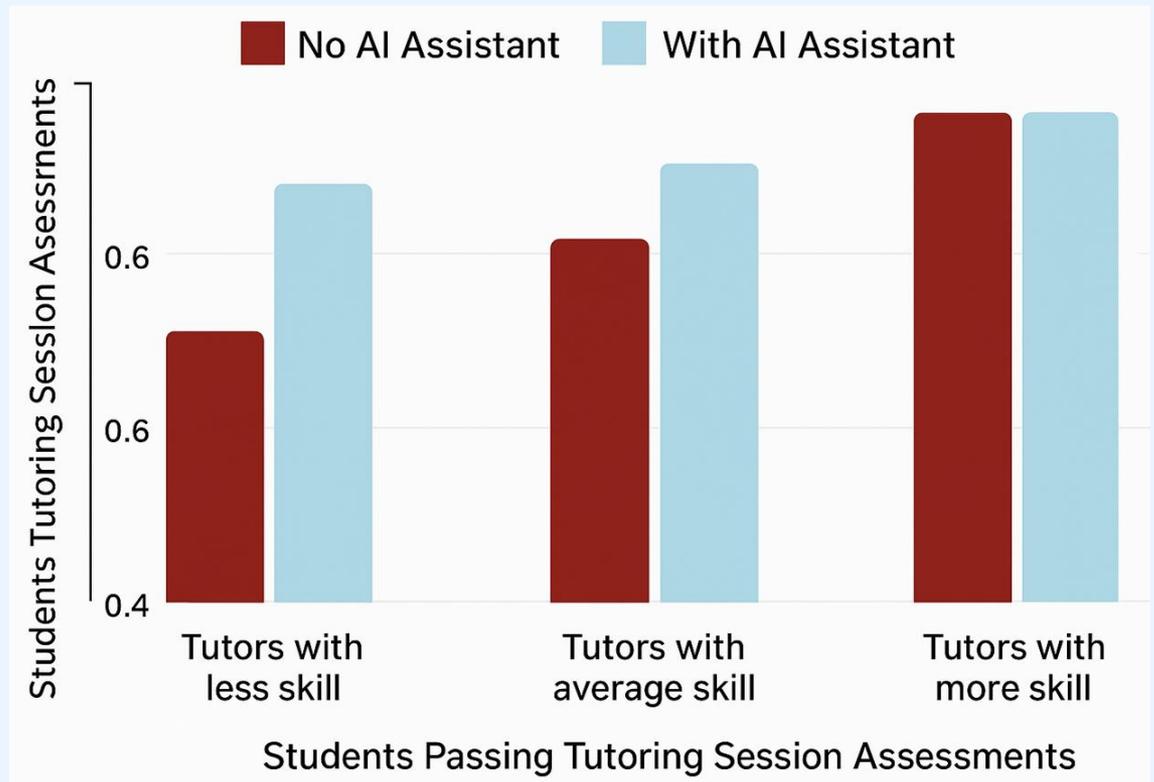
Conversational interaction (students ask questions naturally)

Provides explanations, examples, and step-by-step help

Adapts responses based on student questions

Functions as a **supplementary tutor**, not a replacement for faculty

G – Generative
P – Pre-Trained
T - Transformer



Why Asynchronous Learning Needs AI?

Current Teaching Challenges

Large class sizes

Limited office hours

Diverse student preparation levels

Students study at different times

Immediate doubt resolution is rarely available

Student Reality (Especially Engineering Students)

Study late evenings/weekends

Need instant clarification during problem solving

Hesitate to ask “basic” questions publicly

Role of Asynchronous AI Tutor

Provides help **anytime, anywhere**

Reduces learning interruption

Supports self-paced learning

Reinforces classroom teaching outside class

LLM: A **Large Language Model (LLM)** is an **artificial intelligence system trained on massive amounts of text data to understand, generate, and reason using human language.**

<https://disprz.ai/blog/synchronous-vs-asynchronous-learning>

PROS ✓

- Real-time Interaction
- Peer Collaboration
- Structured Format
- Higher Engagement
- Shared Understanding
- Behavioral & Soft Skills

CONS ✗

- Scheduling Challenges
- Limited Flexibility
- Lower Retention
- Scalability Trade-offs
- Uneven Participation
- Dependence on Delivery

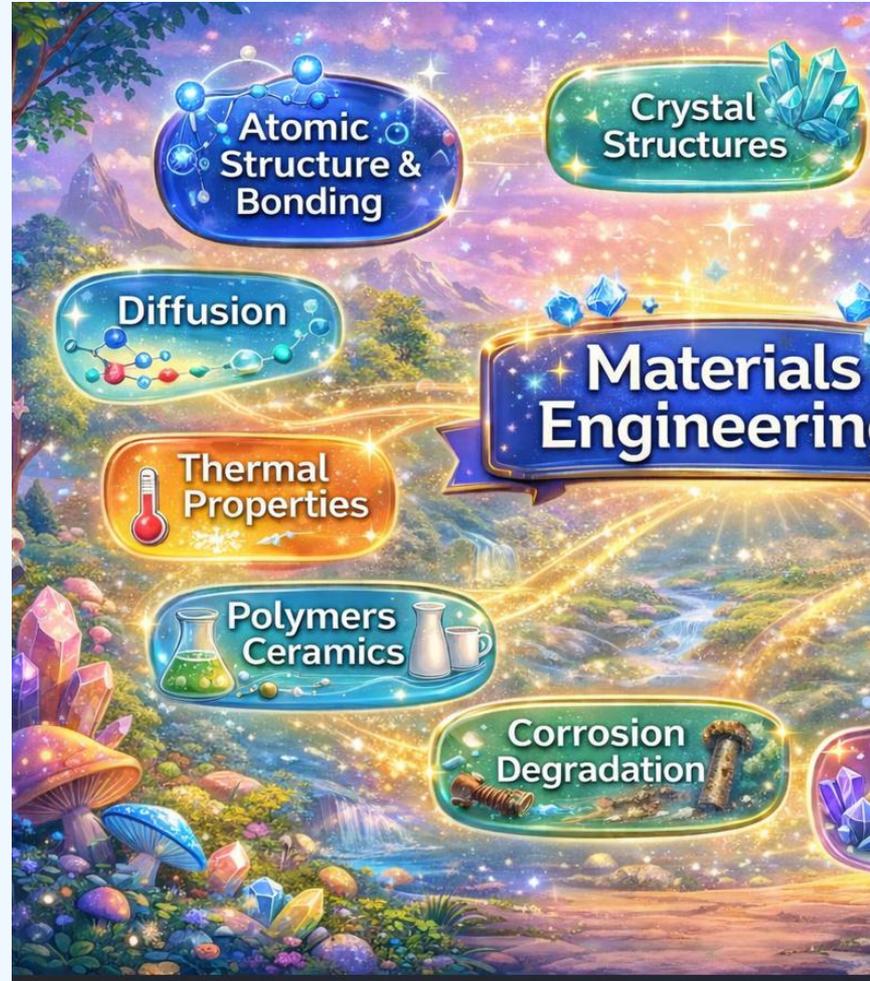
ENGR2300 Course Context

ENGR2300 is Materials Engg

This course is Fundamental to Mechanical Engineering

There are about 20 Chapters (300 Book Pages)

Topics range from Processing, Structure, Properties, Application, and Development of New Materials



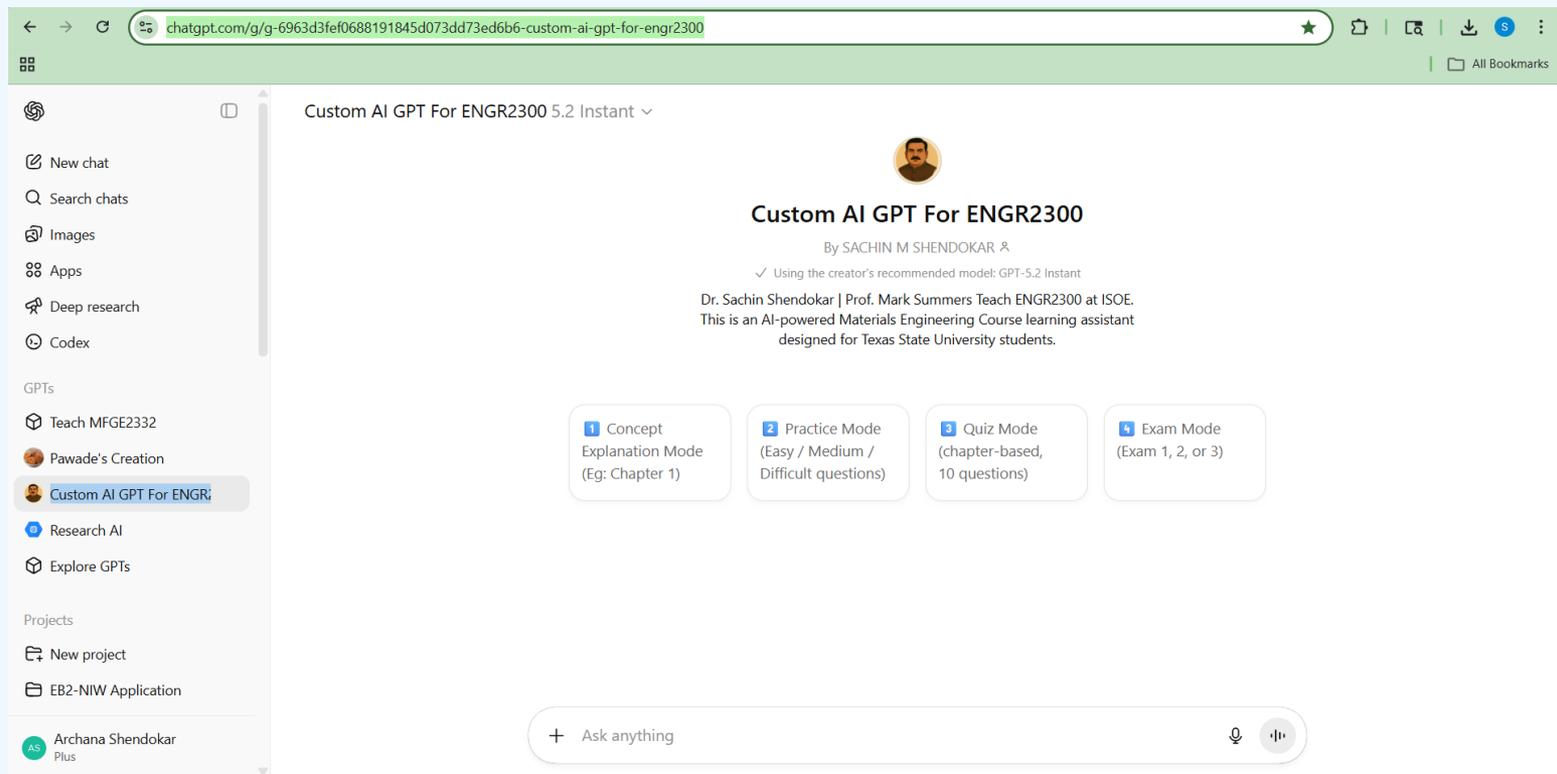
Agentic: Ability to act independently, make decisions, and take goals

Steps to Build a Custom GPT

Define learning goals and tutor personality

Upload course materials, Design structured prompts

Test and refine using student interaction, Deploy for asynchronous learning



The screenshot shows a web browser window with the URL <https://chatgpt.com/g/g-6963d3fef0688191845d073dd73ed6b6-custom-ai-gpt-for-engr2300>. The interface is titled "Custom AI GPT For ENGR2300 5.2 Instant". It features a profile picture of a man and the name "Custom AI GPT For ENGR2300" by SACHIN M SHENDOKAR. A checkmark indicates the use of the recommended model: GPT-5.2 Instant. The creator's information is listed as "Dr. Sachin Shendokar | Prof. Mark Summers Teach ENGR2300 at ISOE. This is an AI-powered Materials Engineering Course learning assistant designed for Texas State University students." Below this, there are four interactive buttons: "1 Concept Explanation Mode (Eg: Chapter 1)", "2 Practice Mode (Easy / Medium / Difficult questions)", "3 Quiz Mode (chapter-based, 10 questions)", and "4 Exam Mode (Exam 1, 2, or 3)". At the bottom, there is a search bar with the text "+ Ask anything" and a microphone icon.

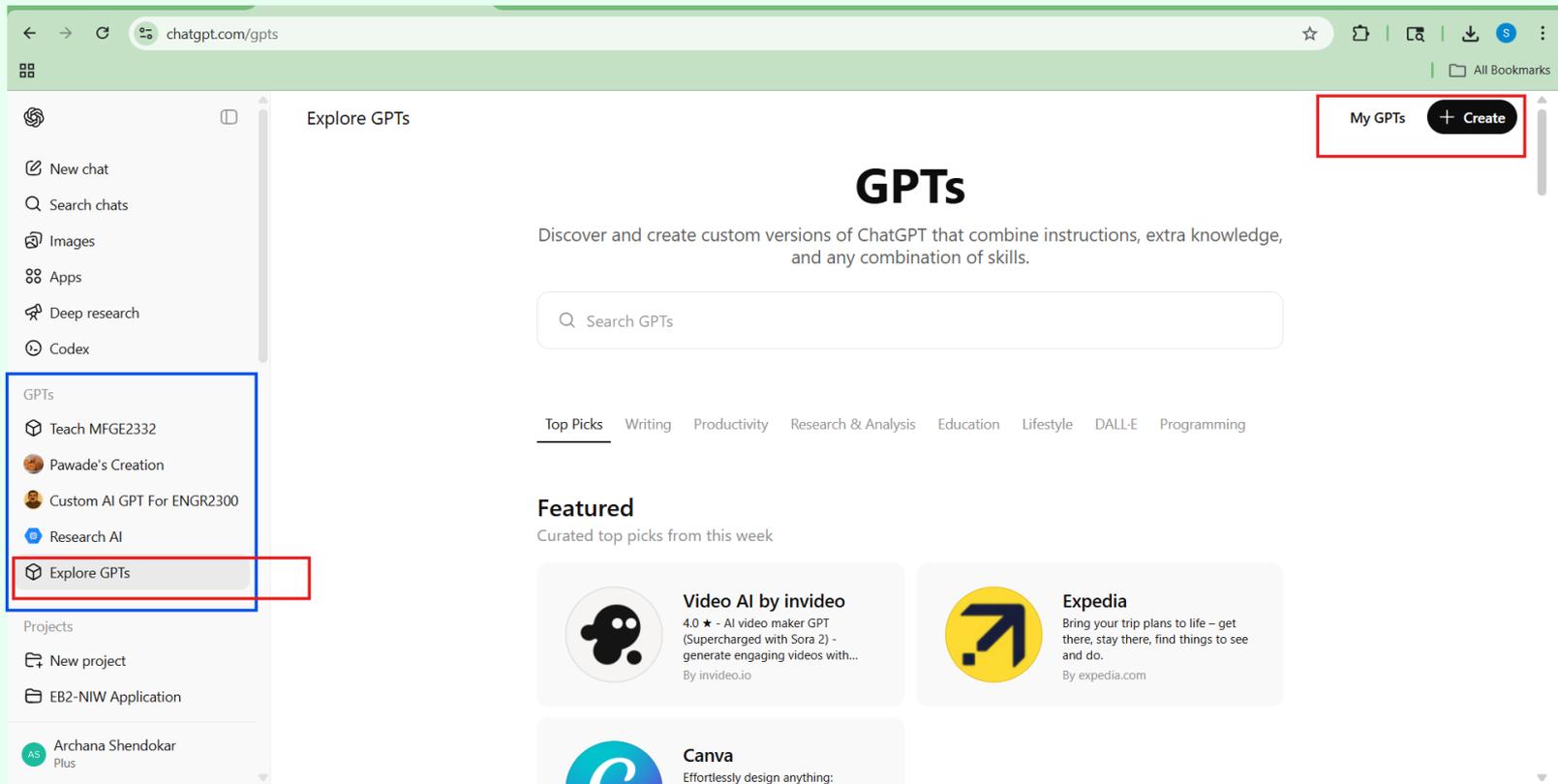
<https://chatgpt.com/g/g-6963d3fef0688191845d073dd73ed6b6-custom-ai-gpt-for-engr2300>

ML: Learning based on data – it could be text, voice, vision/motion, time

Advantages of Custom GPT Tutors

24/7 learning availability, Personalized explanations

Unlimited practice generation, Supports diverse learners



DL: Deep Learning beyond classical statistical level as in Neural Networks

Limitations and Challenges

Occasional incorrect responses

Requires instructor validation

Platform usage constraints

Human mentorship still essential

Students Motivation for Self-Learning

Vibe-Coding

The screenshot shows the ChatGPT GPT editor interface. The browser address bar displays 'chatgpt.com/gpts/editor'. The page title is 'New GPT' with a 'Draft' status. A 'Create' button is highlighted with a red box in the top right corner. The main editing area is divided into two sections: a configuration panel on the left and a preview panel on the right. The configuration panel includes:

- A 'Create' button and a 'Configure' button, both highlighted with a blue box.
- A 'Name' field with the placeholder text 'Name your GPT', highlighted with a green box.
- A 'Description' field with the placeholder text 'Add a short description about what this GPT does', highlighted with an orange box.
- An 'Instructions' field with the placeholder text 'What does this GPT do? How does it behave? What should it avoid doing?', highlighted with a red box. Below this field, a note states: 'Conversations with your GPT can potentially include part or all of the instructions provided.'
- A 'Conversation starters' field, highlighted with a pink box.
- A 'Knowledge' field with the placeholder text 'Conversations with your GPT can potentially reveal part or all of the files uploaded.', highlighted with a light blue box.

The preview panel on the right shows 'Preview' and 'Model 5.2' options. It features a large text input field with a plus sign on the left and a microphone icon on the right. The placeholder text in the input field reads: 'Start by defining your GPT.'

Implementation Strategy

Pilot with one module

Collect student feedback

Integrate quizzes and assignments

Continuously improve prompts

Utilize Custom-GPT for Assessment

**Prompt
Engineering**

Conclusion

AI enhances—not replaces—educators

Scalable personalized engineering learning

Supports asynchronous education

Prepares AI-ready workforce

To enhance student engagement, streamline administrative tasks, and personalize learning experiences.

Thank You – AI ?

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Transformation in Education

with AI and Advanced Technologies

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