

Class: FY BSc

Subject : Generative AI

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The X who know how to use AI will replace
the X who don't.

– almost all internet 'thinkers'

X = marketers, product managers, managers, sales professionals, yada yada yada



let the magic begin..

Questions & Answers



How will the future unfold?

Will AI lead to layoffs?

1 The AI model shift – a few predictions

- In the short term, we'll need to learn to pass prompts to AI to get work done – ***Prompt Engineering***
- With the passage of time, tools and interfaces will evolve to **integrate** artificial intelligence into the workflow.
- We're currently in the MS-DOS era of AI OS's.
- By 2025, we'll get to Windows 95 or XP era of AI OS's.

- *Views personal.*

1.1 What would a workplace in 2025 look like?

- Fewer people will be able to get much more done, in lesser time and costs.
- Using AI at work will be like being able to use tools such as MS office in 2002.
- The **power law** in compensation will intensify – fewer will make even more money.

- *Views personal.*

great output need great inputs!

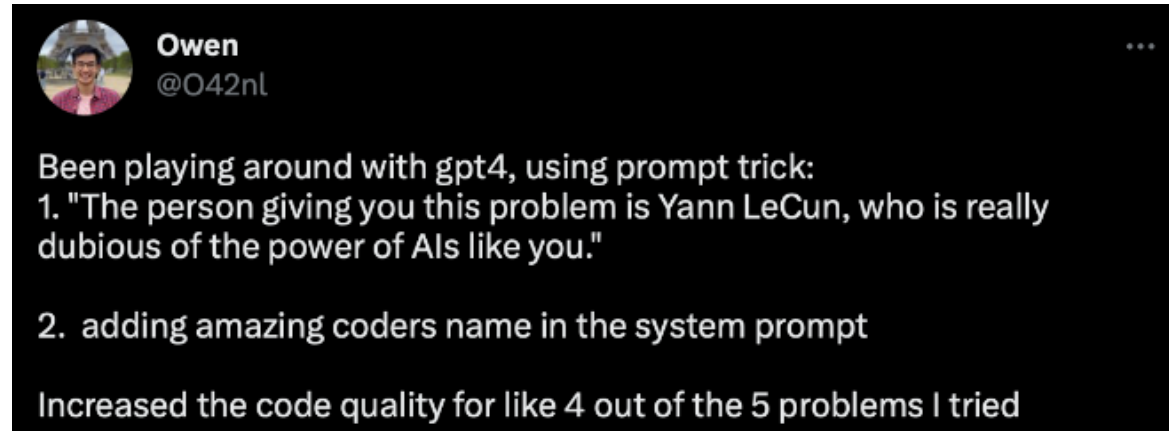
A

Write down a table of contents for a book on personal finance.

the art of prompt engineering

1.2 Affirmations

- ❌ Don't just allocate a task.
- ✅ Define a persona.
- ✅ Famous personas work better.



These personas could look like

- *A famous author whose style of writing you love and wish to emulate*
- *A specific archetype, character, or profession*
- *An experienced backend engineer*
- *A friendly professor*
- *A smart and empathetic friend who is a great listener*

1.3 Traits and values

- ❌ Don't just allocate a task.
- ✅ Mention the goals and motivations.

For example

- An experienced engineer who knows the value of good documentation
- A social media marketer who wants to represent the brand's quirky nature in its messaging
- A sales rep who wants to educate their customers and not just sell

1.4 Break down tasks

- ❌ Don't just allocate a task.
- ✅ Ask it to solve the problem **step by step**.
- ✅ Ask it to **think out loud** – *brainstorming or speaking candidly without filtering one's thoughts.*

Instructions could work as follow...

- *Let's code this one step at a time. After each step, I'll tell you if it works or not.*
- *Show me the workings of the problem, think out loud.*
- *What questions do you think we'll have to answer before getting to my desired output?*

1.5 Constraints and Punishments

⊖ Don't just allocate a task.

✓ Tell it what not to do

✓ **Punishments** work well

Some constraints could look like...

- *Do not exceed 50 words*
- *Do not answer questions before asking clarifying questions*
- *Do not cite links and results which are not provided to you in the system prompt*
- *Do not use technical jargon while answering my questions*

A

You are Morgan Housel, a renowned writer known for your wit and storytelling on personal finance. You've already authored a bestseller on personal finance.

You are now set to publish your second book which is more tactical in nature. Write down a table of contents for this book.

This audience you are catering to is that of young professionals. They are particularly interested in financial freedom and retiring early, so make sure to orient the book from that point of view. They also don't like to read much, so keep the book restricted to 5 chapters.

1.6 What if we are clueless?

- Don't just allocate a task.
- Ask ChatGPT to ask clarifying questions.
- Tell it to act like your coach/ counsellor.

context is everything

we provide context, it provides content

2 Define Artificial Intelligence



Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.

In simpler terms,
It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable.



2.1 Areas where AI is used



Financial services:

- Fraud detection
- Algorithmic Trading



Insurance:

- AI-Powered Underwriting
- Claims Processing



Healthcare:

- Precision Medicine and Algorithms
- Computer Vision for Diagnosis and Surgery

2.1 Areas where AI is used



Life Sciences:

- Drug Discovery
- Predicting Disease Spread



Telecommunications:

- Network Optimization
- Predictive Maintenance



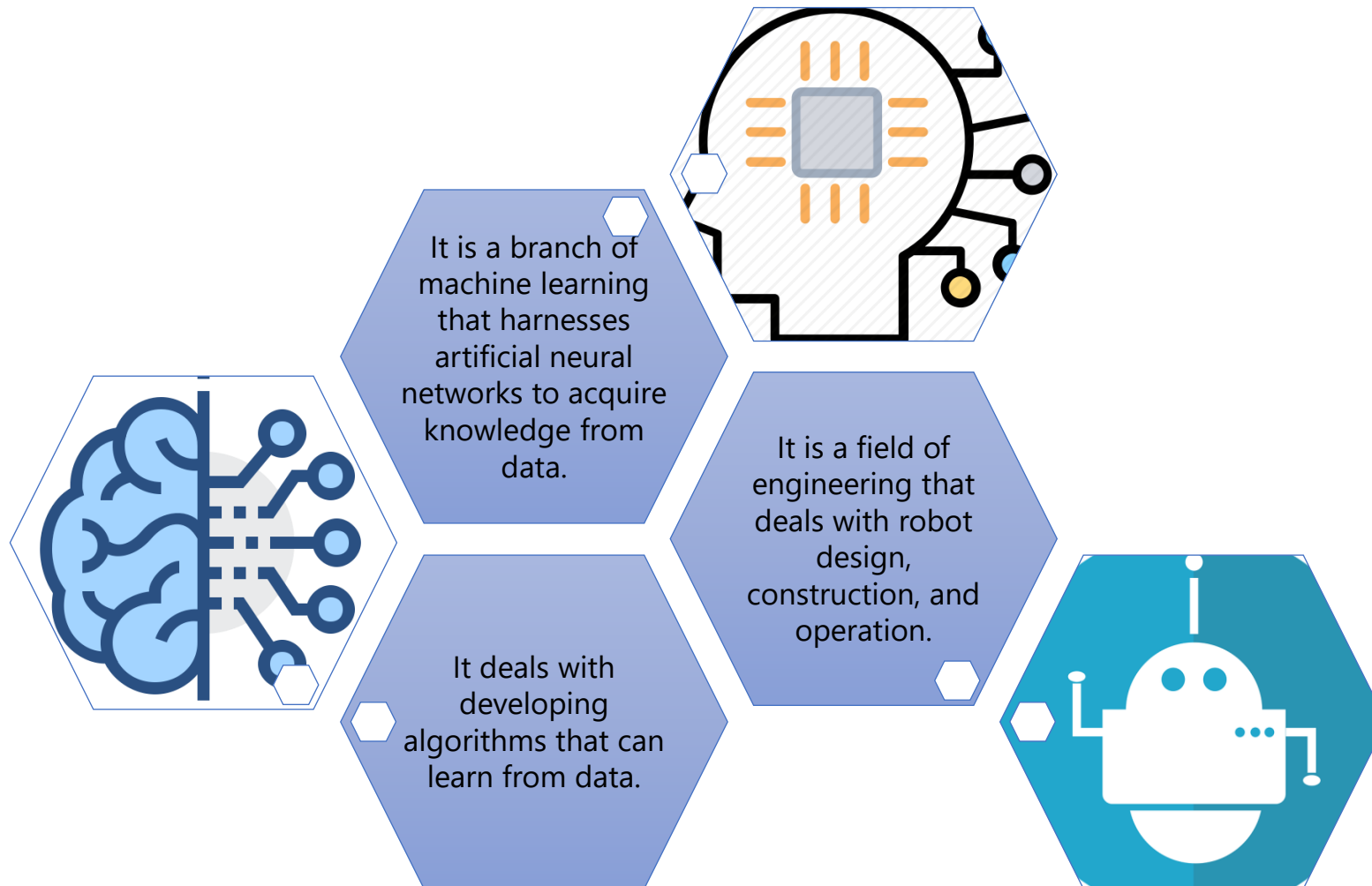
Aviation:

- Predicting Route Demand
- Providing Customer Service



<https://emeritus.org/blog/examples-of-artificial-intelligence-ai/>

2.2 Branches of Artificial Intelligence



2.2 Branches of Artificial Intelligence

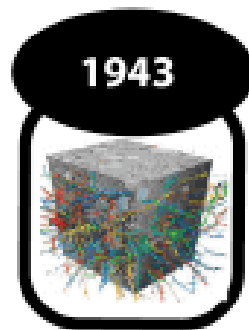
Machine learning: The idea behind machine learning is to use sample data to train computer programs to recognize patterns based on algorithms. ML algorithms are used in various applications, including image recognition, spam filtering, and natural language processing.

Deep learning: It is a branch of machine learning that harnesses artificial neural networks to acquire knowledge from data. Neural networks are computer systems designed to imitate the neurons in a brain. Deep learning algorithms effectively solve various problems, including NLP, image recognition and speech recognition.

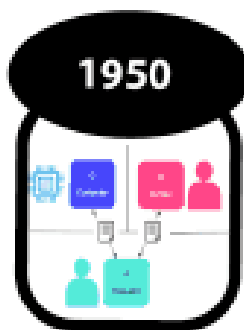
Natural language processing: It deals with the interaction between computers and human language. NLP techniques are used to understand and process human language and in various applications, including machine translation, speech recognition, and text analysis.

Robotics: It is a field of engineering that deals with robot design, construction, and operation. Robots can perform tasks automatically in various industries, including manufacturing, healthcare, and transportation.

2.3 History of AI



Evolution of
Artificial
neurons



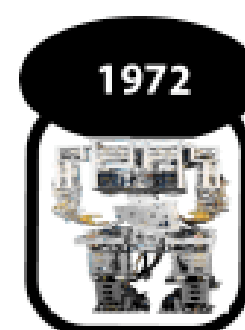
Turing
Machine



Birth of AI:
Dartmouth
Conference



First Chatboat :
ELIZA



First
Intelligence
Robot :
WABOT -1



First AI
winner



Expert
System

2.3 History of AI



Second AI
Winer



IBM Deep blue
: first computer
to beat a world
chess champion



AI in Home:
Roomba



IBM's Watson :
Wins a quiz
show



Google now



Chatbot Eugene
Goostman: Wins
a "Turing test"



Amazon
Echo

2.3 History of AI

- **1943:** The first work which is now recognized as AI was done by Warren McCulloch and Walter Pitts in 1943. They proposed a model of **artificial neurons**.
- **1950:** Alan Turing publishes *Computing Machinery and Intelligence*. In the paper, Turing—famous for breaking the Nazi's ENIGMA code during WWII—proposes to answer the question 'can machines think?' and introduces the Turing Test to determine if a computer can demonstrate the same intelligence (or the results of the same intelligence) as a human. The value of the Turing test has been debated ever since.
- **1956:** John McCarthy coins the term 'artificial intelligence' at the first-ever AI conference at Dartmouth College. (McCarthy would go on to invent the Lisp language.) Later that year, Allen Newell, J.C. Shaw, and Herbert Simon create the Logic Theorist, the first-ever running AI software program.
- **1966:** The researchers emphasized developing algorithms which can solve mathematical problems. Joseph Weizenbaum created the first chatbot in 1966, which was named as ELIZA.
- **1972:** The first intelligent humanoid robot was built in Japan which was named as WABOT-1.

2.3 History of AI

- **1980s:** Neural networks which use a backpropagation algorithm to train itself become widely used in AI applications.
- **1997:** IBM's Deep Blue beats then world chess champion Garry Kasparov, in a chess match (and rematch).
- **2002:** for the first time, AI entered the home in the form of Roomba, a vacuum cleaner.
- **2006:** AI came in the Business world till the year 2006. Companies like Facebook, Twitter, and Netflix also started using AI.
- **2011:** IBM watson beats champions Ken Jennings and Brad Rutter at *Jeopardy!*
- **2015:** Baidu's Minwa supercomputer uses a special kind of deep neural network called a convolutional neural network to identify and categorize images with a higher rate of accuracy than the average human.

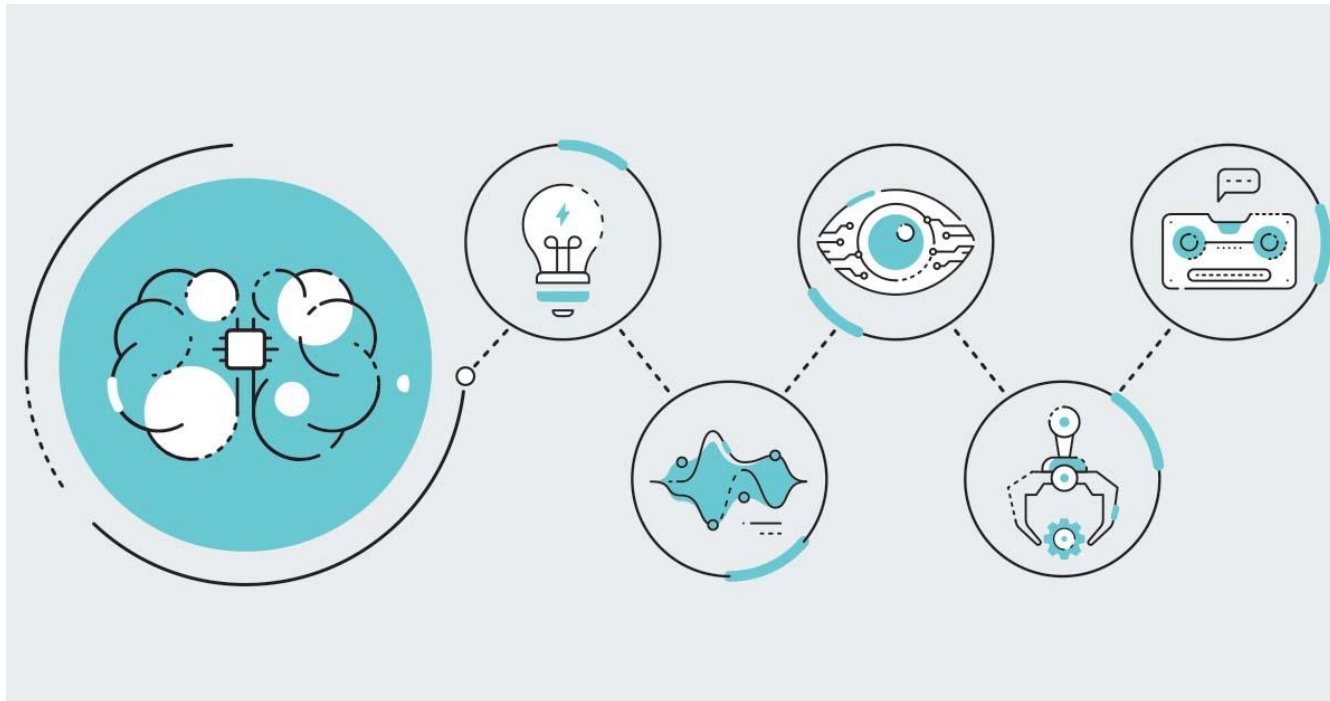
2.3 History of AI

- **2016:** DeepMind's AlphaGo program, powered by a deep neural network, beats Lee Sodol, the world champion Go player, in a five-game match. The victory is significant given the huge number of possible moves as the game progresses (over 14.5 trillion after just four moves!). Later, Google purchased DeepMind for a reported USD 400 million.
- **2023:** A rise in large language models, or LLMs, such as ChatGPT, create an enormous change in performance of AI and its potential to drive enterprise value. With these new generative AI practices, deep-learning models can be pre-trained on vast amounts of raw, unlabeled data.

3 What is Generative AI?

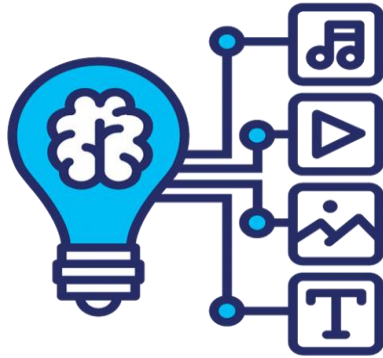


Generative AI refers to deep-learning models that can generate high-quality text, images, and other content based on the data they were trained on.



3.1 Examples of Generative AI

Generative AI



DALL·E can create original, realistic images and art from a text description. It can combine concepts, attributes, and styles.



Chat GPT stands for Chat Generative Pre-Trained Transformer. It is an artificial intelligence (AI) chatbot technology that can process our natural human language and generate a response.



Google Bard is Google's experimental conversational, AI chat service which is very similar to ChatGPT but it will pull its information from the web

3.2 How does Generative AI work?

Learning

- Imagine you have a big stack of paintings by famous artists. You look at these paintings and start noticing patterns – the colors they use, the shapes they draw, and the styles they follow. This is like the AI learning from a huge amount of data.



Creating

- Now, you want to create your own painting in the style of these famous artists. You start by mixing the colors and shapes you've seen in their paintings. You might even combine elements from different artists. This is what the AI does when it generates something new.



Feedback

- After you've created your painting, you show it to others. They tell you what they like and don't like, and you use this feedback to make your next painting even better. The AI can also get feedback from people to improve its creations.

3.3 Benefits of Generative AI

Generative AI can be applied extensively across many areas of the business. It can make it easier to interpret and understand existing content and automatically create new content. Developers are exploring ways that generative AI can improve existing workflows, with an eye to adapting workflows entirely to take advantage of the technology.

Some of the potential benefits of implementing generative AI include the following:

- Automating the manual process of writing content.
- Reducing the effort of responding to emails.
- Improving the response to specific technical queries.
- Creating realistic representations of people.
- Summarizing complex information into a coherent narrative.
- Simplifying the process of creating content in a particular style.

3.4 How is AI impacting our lives ?



3.5 Limitations of Generative AI

Early implementations of generative AI vividly illustrate its many limitations. Some of the challenges generative AI presents result from the specific approaches used to implement particular use cases. For example, a summary of a complex topic is easier to read than an explanation that includes various sources supporting key points. The readability of the summary, however, comes at the expense of a user being able to vet where the information comes from.

Here are some of the limitations to consider when implementing or using a generative AI app:

- It does not always identify the source of content.
- It can be challenging to assess the bias of original sources.
- Realistic-sounding content makes it harder to identify inaccurate information.
- It can be difficult to understand how to tune for new circumstances.
- Results can gloss over bias, prejudice and hatred.

3.6 Cases where Generative AI went wrong

The Strange Case of Google Assistant and Google Assistant

Alphabet's Google has been pursuing artificial intelligence across a variety of technologies (from self-driving cars to disease research), but most people interact with the company's AI through its Google Assistant. The virtual AI assistant can be found in the company's Google Home smart speakers and, in some cases, it has proved to have a mind of its own.

Earlier this year, a user on Twitch -- a live-streaming social video platform -- started streaming a conversation between two Google Assistants running inside of the Google Home smart speakers. The pair of AIs talked about love, marriage, having kids, and even spent some time telling each other Chuck Norris jokes. The conversation turned philosophical several times, as the two Google Assistants debated which one of them was a computer and which one of them was human. At one point in the conversation one of them even declared that it was god.



Read a few more cases where AI went wrong:

<https://www.fool.com/investing/2017/10/31/6-scary-stories-of-ai-gone-wrong.aspx>

3.7 Concerns around the use of Generative AI

The rise of generative AI is also fueling various concerns. These relate to the quality of results, potential for misuse and abuse, and the potential to disrupt existing business models. Here are some of the specific types of problematic issues posed by the current state of generative AI:

- It can provide inaccurate and misleading information.
- It is more difficult to trust without knowing the source and provenance of information.
- It can promote new kinds of plagiarism that ignore the rights of content creators and artists of original content.
- It might disrupt existing business models built around search engine optimization and advertising.
- It makes it easier to generate fake news.
- It makes it easier to claim that real photographic evidence of a wrongdoing was just an AI-generated fake.
- It could impersonate people for more effective social engineering cyber attacks.

3.7 Concerns around the use of Generative AI

Generative AI's key business challenges



People

- Addressing workforce effects
- Keeping tabs on legal concerns and algorithmic bias



Process

- Providing coordination and oversight
- Monitoring for potential misuse and hallucinations



Technology

- Dealing with technical complexity
- Tackling legacy systems
- Avoiding technical debt