Robodog

Understanding Self-Awareness and the Limitations of Artificial Intelligence (AI) in the Journey to Artificial General Intelligence (AGI)

Machine Learning vs Artificial Intelligence (AI) vs Artificial General Intelligence (AGI)

Machine Learning (ML) is a subset of AI that focuses on a specific task. It involves training models on data and then using these models to make predictions or decisions without being explicitly programmed to perform the task.

Artificial Intelligence (AI) is a broader concept referring to machines or software that can mimic human intelligence. AI can learn from experience, adjust to new inputs, and perform tasks that usually require human intelligence.

Artificial General Intelligence (AGI) is a highly autonomous system that outperforms humans in most economically valuable work. It's about machines having the ability to understand, learn, adapt, and implement knowledge in a broad range of tasks at a level equal to or beyond human capabilities.

Large Language Model (LLM)

A **Large Language Model (LLM)** fits within the realm of **Machine Learning** and **AI**.

LLMs are trained using machine learning techniques, specifically a type called deep learning. They learn from large amounts of text data and build a statistical model that can generate human-like text.

Given that LLMs can generate responses or create content that mimics human-like text, they serve as an example of AI. They simulate a form of human intelligence, in this case, understanding and generating language.

While LLMs are impressive examples of AI, they do not fall under AGI.

Limitations of Large Language Models

Language models like GPT can generate human-like text but **don't truly understand the content**.

These models are heavily dependent on the **quality** and **nature** of the **input data**.

Unlike humans, these models don't have **self-awareness or consciousness**.

Theories of Self-Awareness

The **theory of mind** suggests that self-awareness stems from our ability to comprehend that others have different experiences and thoughts. *This theory could map to AGI only.*

The **protagonist theory** proposes that we see ourselves as the central character in our life's narrative, which leads to self-awareness. *This theory could map to AI and AGI.*

The emergent self-theory implies that self-awareness evolves from our interactions and relationships with others. *This theory could be associated with AGI.*

The mirror test theory posits that self-awareness can be measured by an entity's ability to recognise itself in a mirror. This theory could fit between AI and AGI.

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The **mirror test theory** posits that self-awareness can be measured by an entity's ability to recognise itself in a mirror. This theory could fit between AI and AGI.

To make the transition from ML/AI to AGI, self-awareness is a crucial aspect.

In the **theory of mind**, the AGI should be programmed to understand and **predict** the **actions** and **thoughts** of other agents (including humans and other AGI systems).

In the **protagonist theory**, the AI or AGI needs to **perceive** itself as the **central character** in its experiences.

In the **emergent self-theory**, the AGI might develop self-awareness through **interactions** and **relationships** with other entities.

In the **mirror test theory**, the AGI system needs to recognize itself and distinguish its actions and state from those of others.

Path to Artificial General Intelligence (AGI)

Incremental Improvements: Continuous enhancements in AI models and techniques.

Interdisciplinary Research: Combining insights from psychology, neuroscience, and computer science.

Ethical Guidelines: Establishing guidelines to ensure the responsible development and use of AGI.
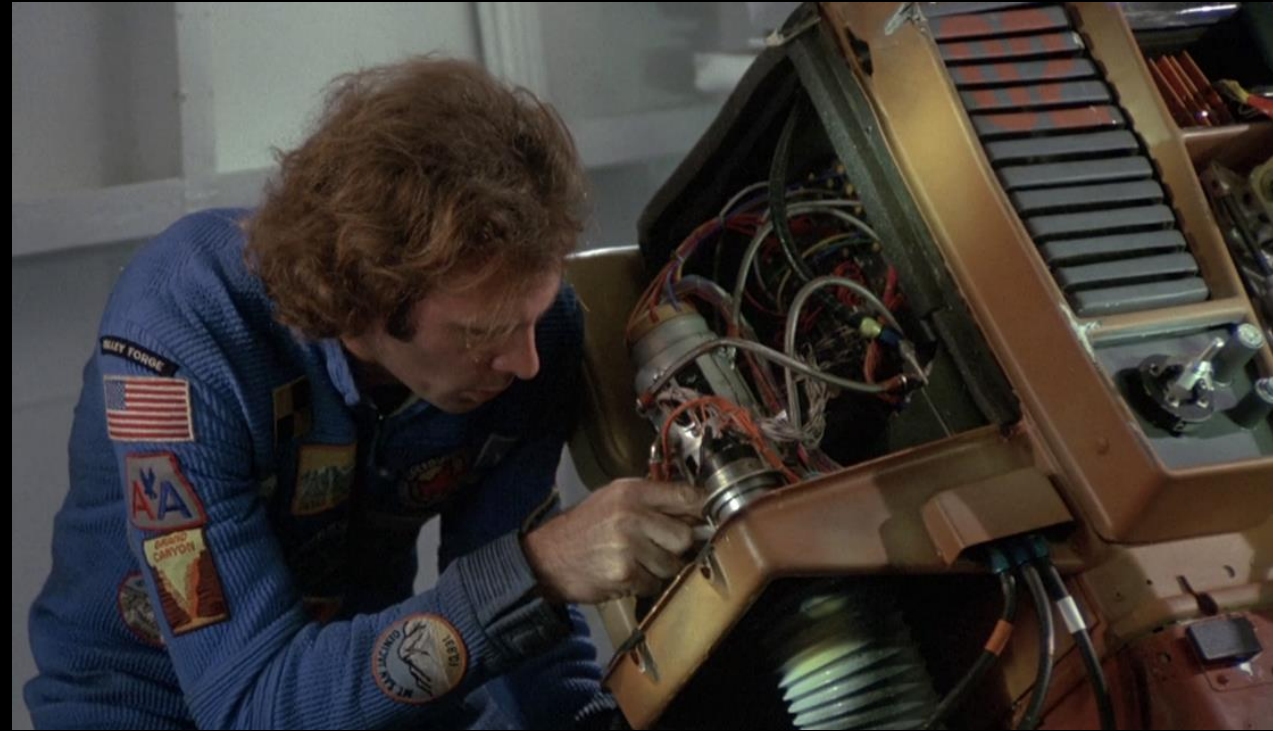
Path to Artificial General Intelligence (AGI)

Level	Type	Description
1	Chatbots	AI with natural conversation language abilities
2	Reasoners	AIs with human-levels of problem-solving across a broad range of topics
3	Agents	AI entities capable of autonomously making decisions and carrying out tasks either independently or based on human guidance.
4	Innovators	AI that can aid in the invention of new ideas and contribute to human knowledge
5	Organizations	AI that is capable of doing all of the work of an organization independently

Robodog

A comprehensive and portable tool designed to tokenize knowledge artefacts and interact with large language models (LLMs)

Why Create Robodog

A pre-trained transformer-based model is **trained on the Internet** and third-party providers license data.

These models are useful curiosities. They are **not perfect**, but they can help us.

Given that AGI seems far away, we must make the most of what we have now.

To do this, we must get out **own knowledge** into the models.

There are **limitations** and we must be careful.

Knowledge Artifacts

Our personal knowledge artefacts are fragmented into many **formats.**

They are embedded into many **providers**: Google, Microsoft, Dropbox, Adobe, Apple

They exist in a myriad of formats, from images and PDFs to text, email, tasks, digital devices, and notes.

With Robodog, we can traverse our artefacts and **convert** them into a format in which a **model** can **interact** with the transformer model.

How Robodog Works

Select an option

Select a save point

```
08:42:37  :Content cleared.
08:44:18  :create function to convert image to text
08:44:18  :Sure, here is the function that is used to convert an image to text in the provided code. It uses Tesseract.js, which is
a JavaScript library that gets its power from the Tesseract OCR Engine.

```javascript
async extractImageContent(arrayBuffer) {
  console.debug('extractImageContent', arrayBuffer)
  var text = ''
  try {
    var r = await Tesseract.recognize(arrayBuffer, 'eng');
    console.debug('Tesseract.recognize', r)
    if (r.data && r.data.text) {
      text = r.data.text;
    }
  } catch (ex) {
    console.error('Tesseract.recognize', ex)
  }
  return text;
}
```

This function takes an ArrayBuffer of the image as an input, then it uses the `Tesser   t from
the image. The Tesseract engine is set to recognize English text ('eng'). Once the te
function. If an error occurs during the process, it is caught and logged to the consc
```

```
[496/8192][gpt-4][  ][stop][Sure, ]
create function to convert image to text
```

All chat history is added to the 'chat context'. History can be pruned to stay within the 8,192 token context window limitation

```
    }
    return text;
  } catch (error) {
    console.error('An error occurred while extracting the PDF content', error);
    return 'error ' + error;
  }
}
async extractImageContent(arrayBuffer) {
```

Add your knowledge here.

Chat :

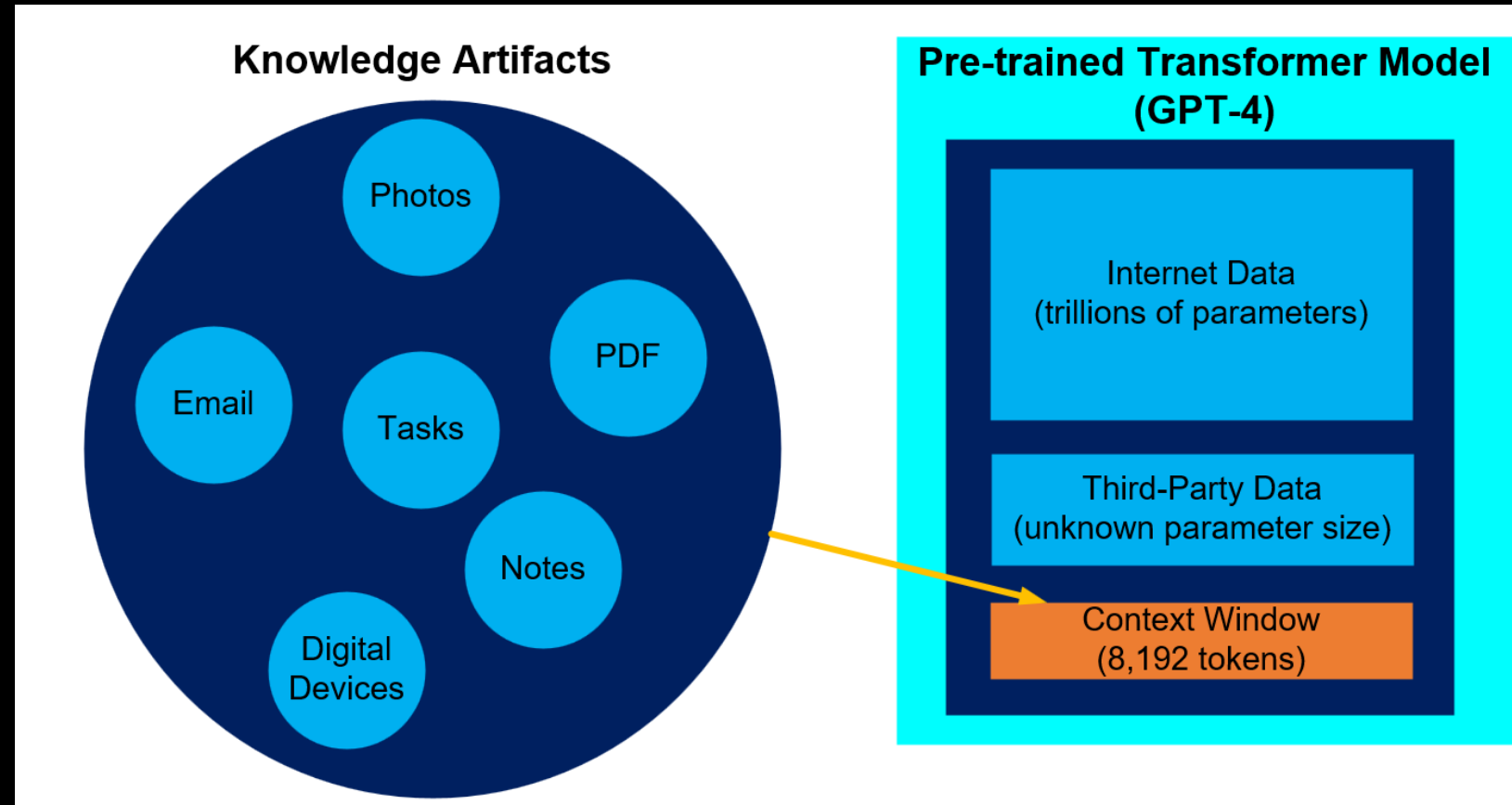Add your question here. Switch between GPT3.5 and GPT4 models without losing chat context.

Knowledge Artifacts vs Context Window

There is no way around the **limitations** of the **context window size**.

Less expensive models are **4,000** tokens and more expensive models are **128,000** tokens

There is a need to **prune** the context window

The open ai **custom GPT** product attempts to automate **pruning process** using an **elastic search**. From experience, this does not work very well in practice
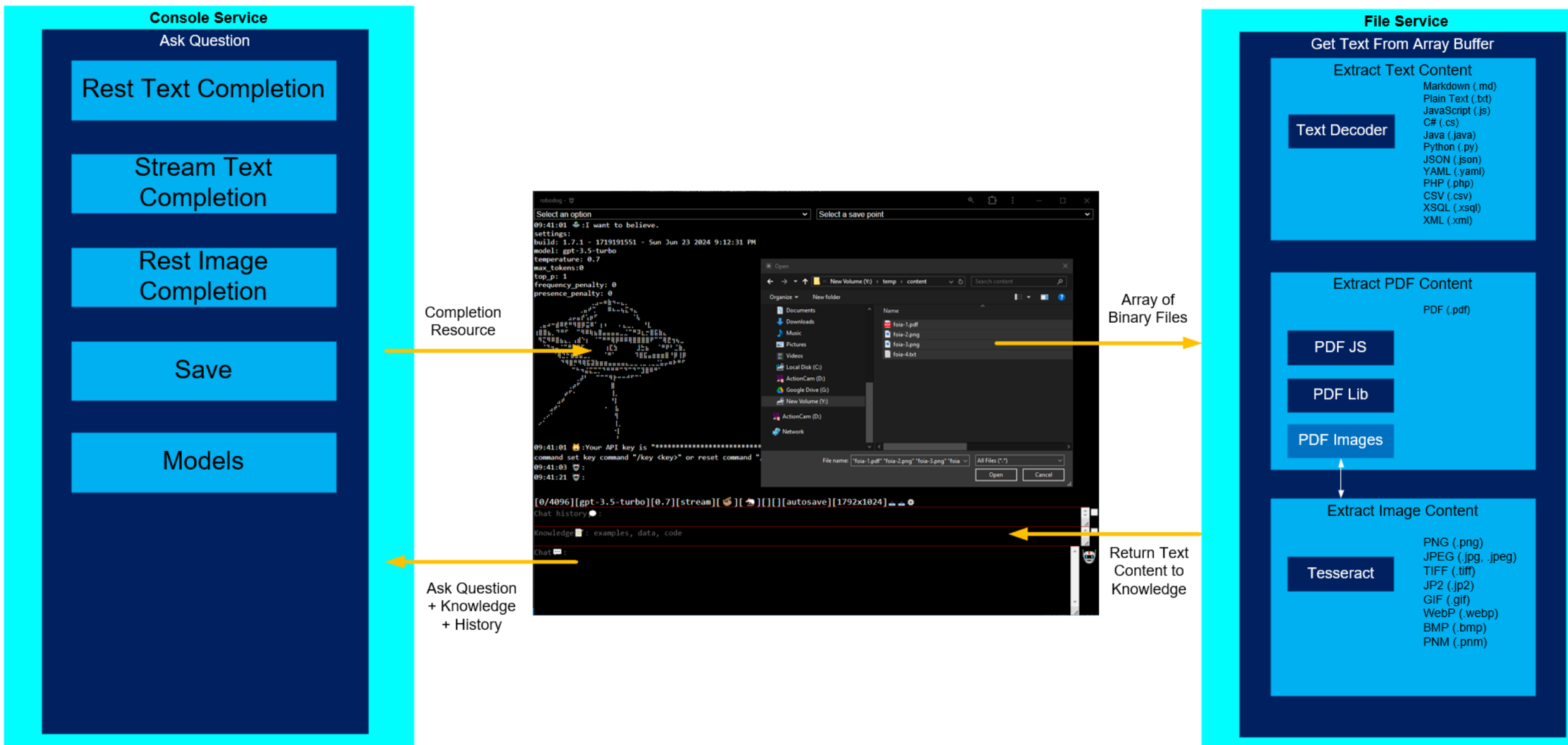
Knowledge Artifacts

- Photos
- Email
- Tasks
- PDF
- Notes
- Digital Devices

Pre-trained Transformer Model (GPT-4)

Internet Data
(trillions of parameters)

Third-Party Data
(unknown parameter size)

Context Window
(8,192 tokens)

Robodog Features

Separation of Concerns

Conclusion