Epistemic Insight

Which if any of these images are real, and how do you know?

Epistemic Insight

Big Questions about the nature of reality, the meaning of life and the significance of being unique

Prof Berry Billingsley LASAR

What is '**epistemic insight**'?

And how can epistemic insight help us with answering our questions – in the age of Generative AI

- *Epistemic insight (EI)*
- refers to those 'aha' moments when suddenly we realise something about 'knowledge' that was hidden to us before.
- It means 'knowledge about knowledge' – e.g. aha – so a scientist and an artist can both be in awe of a water droplet and yet be seeing different things.

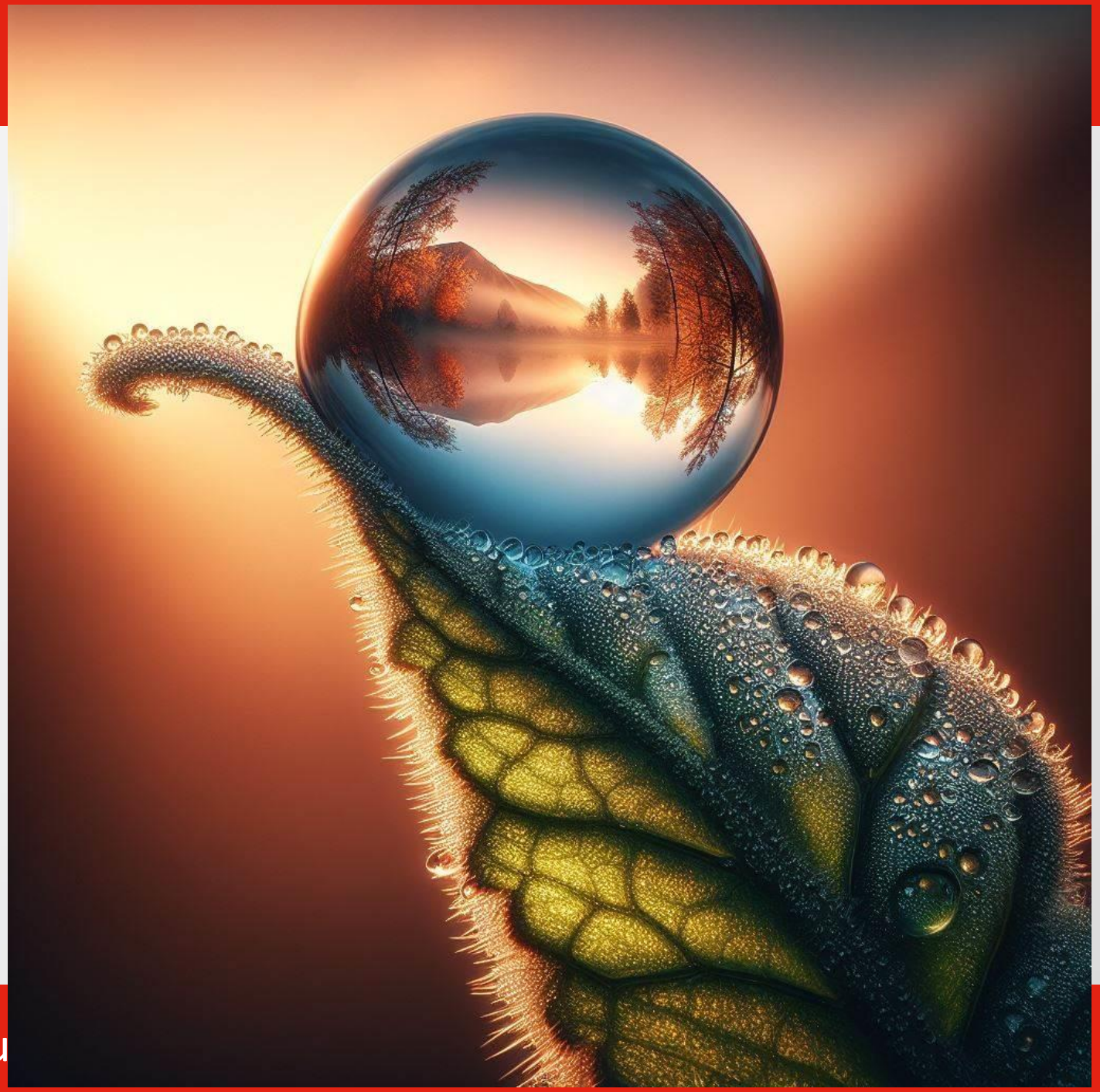
Big Questions about the nature of reality

What are some of the puzzling things in this photo?

Is it a photo? Is it factual knowledge?

How do we know this is what our galaxy looks like from outer space?

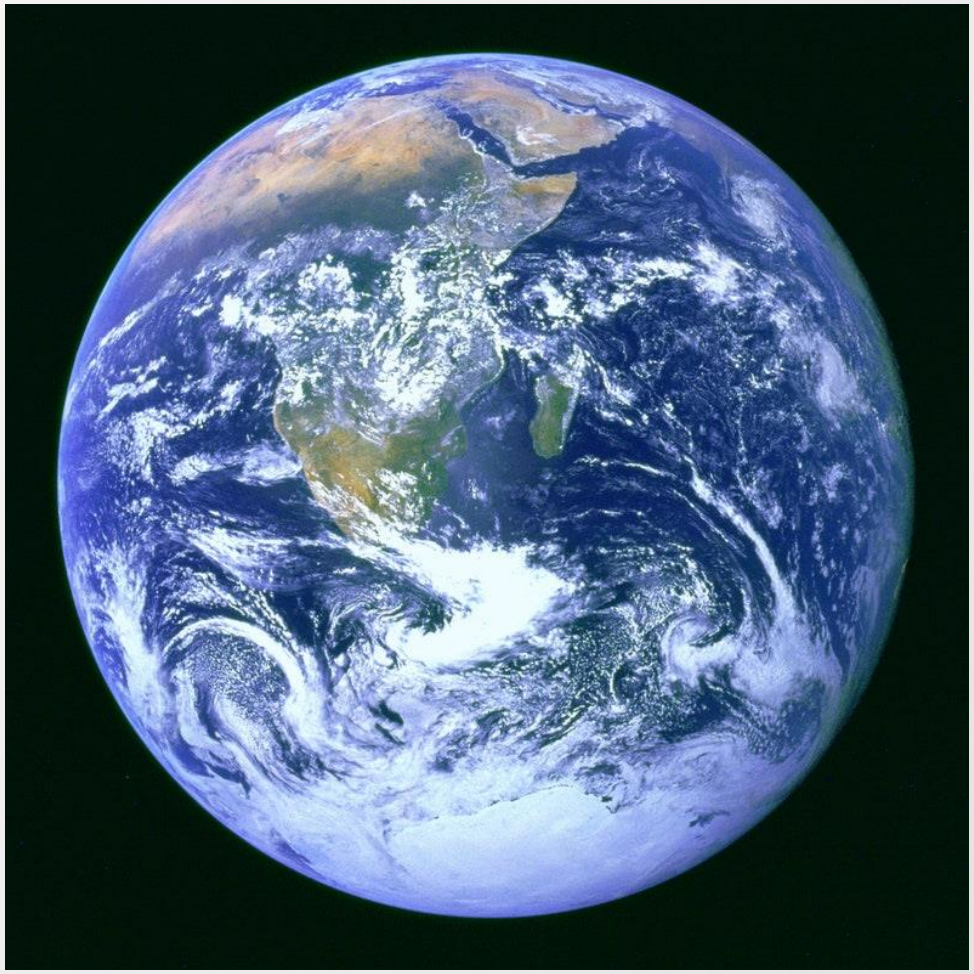
What are some of the puzzling things about this photo?



What puzzles you about this image?

Is it real?

How real?



HowStuffWorks / Science / Space / Space Exploration

What Does Space Smell Like?

By: Valerie Stimac | Updated: Mar 7, 2024

Many astronauts report different smells in the airlock after participating in spacewalks.

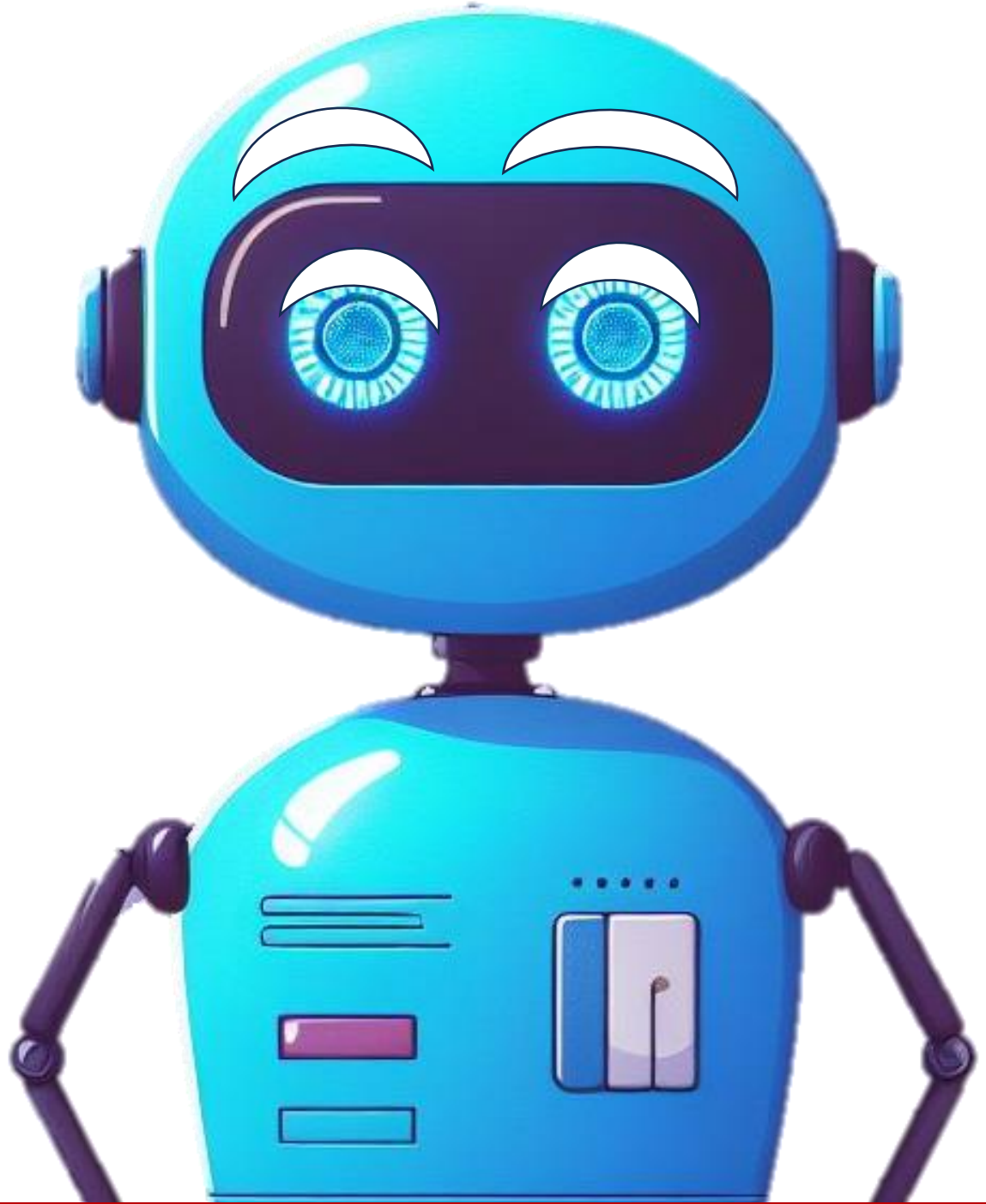
"The best description I can come up with is metallic; a rather pleasant sweet metallic sensation," wrote astronaut Don Pettit, according to Space.com. "It reminded me of my college summers where I labored for many hours with an arc welding torch repairing heavy equipment for a small logging outfit. It reminded me of pleasant sweet-smelling welding fumes. That is the smell of space." Pettit participated in several EVAs (extravehicular activities or spacewalks) during his NASA career, accumulating repeated experience with the smell.

https://science.howstuffworks.com/space-smell.htm

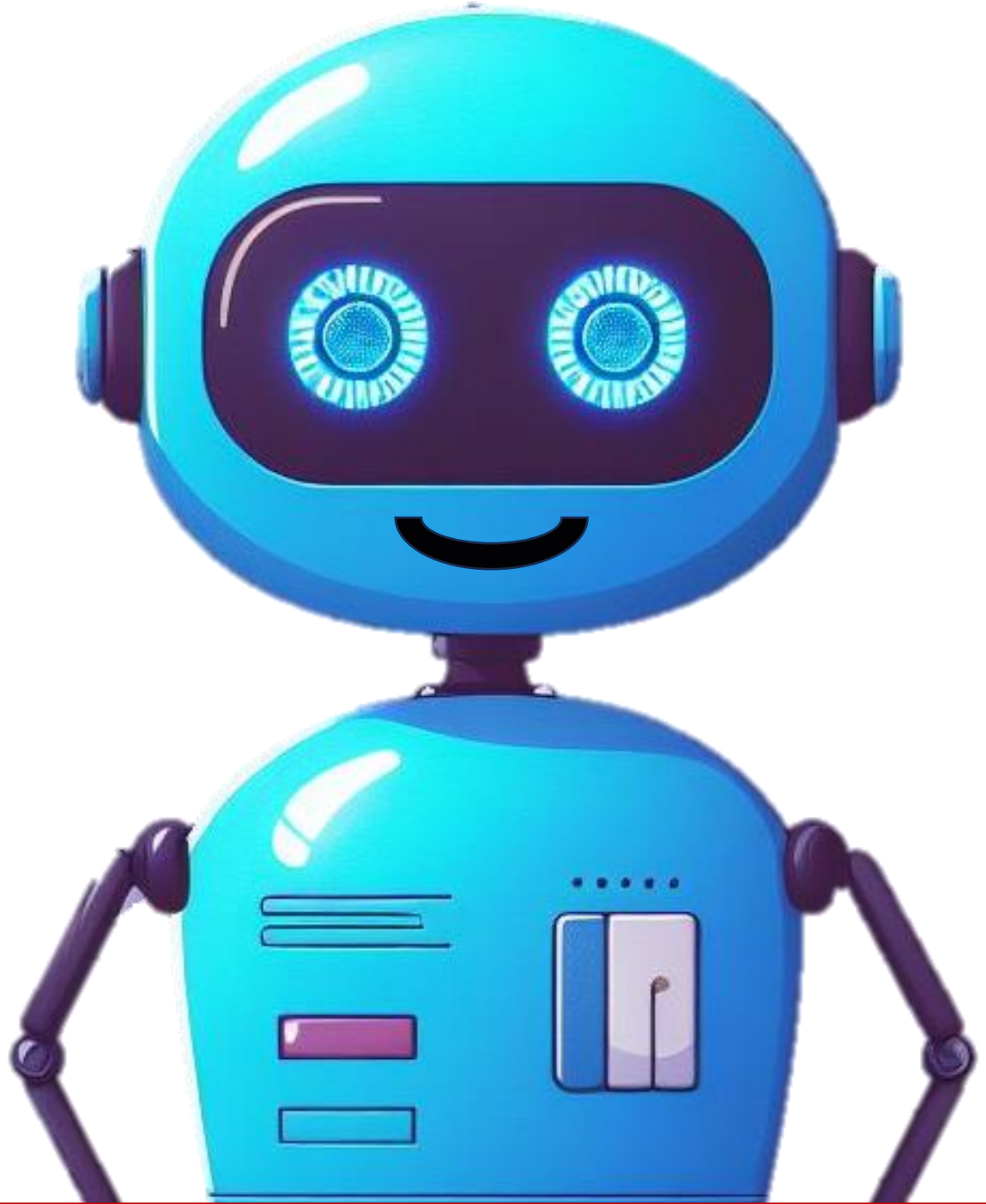
Epistemic Insight

Cheating or Collaboration? GenAI & the Future of Knowledge

- Prof Berry Billingsley
- Our unprecedented capacity to gather, store and analyse big data in all its forms – text, code, images, social media, astronomical observations and beyond – is having a profound impact on how we approach knowledge creation and understanding.
- AI plays a pivotal role in driving this transformation. For decades we've used machines to study and reveal patterns in vast datasets. GenAI takes another leap forward because it can generate new content by applying what it learns. That opens the door for countless more inventions with the potential to improve our lives. But with any technology there are risks and limitations.
- The GenAI models causing a stir are the LLMs – because they have an interface that invites 'natural language' prompts.

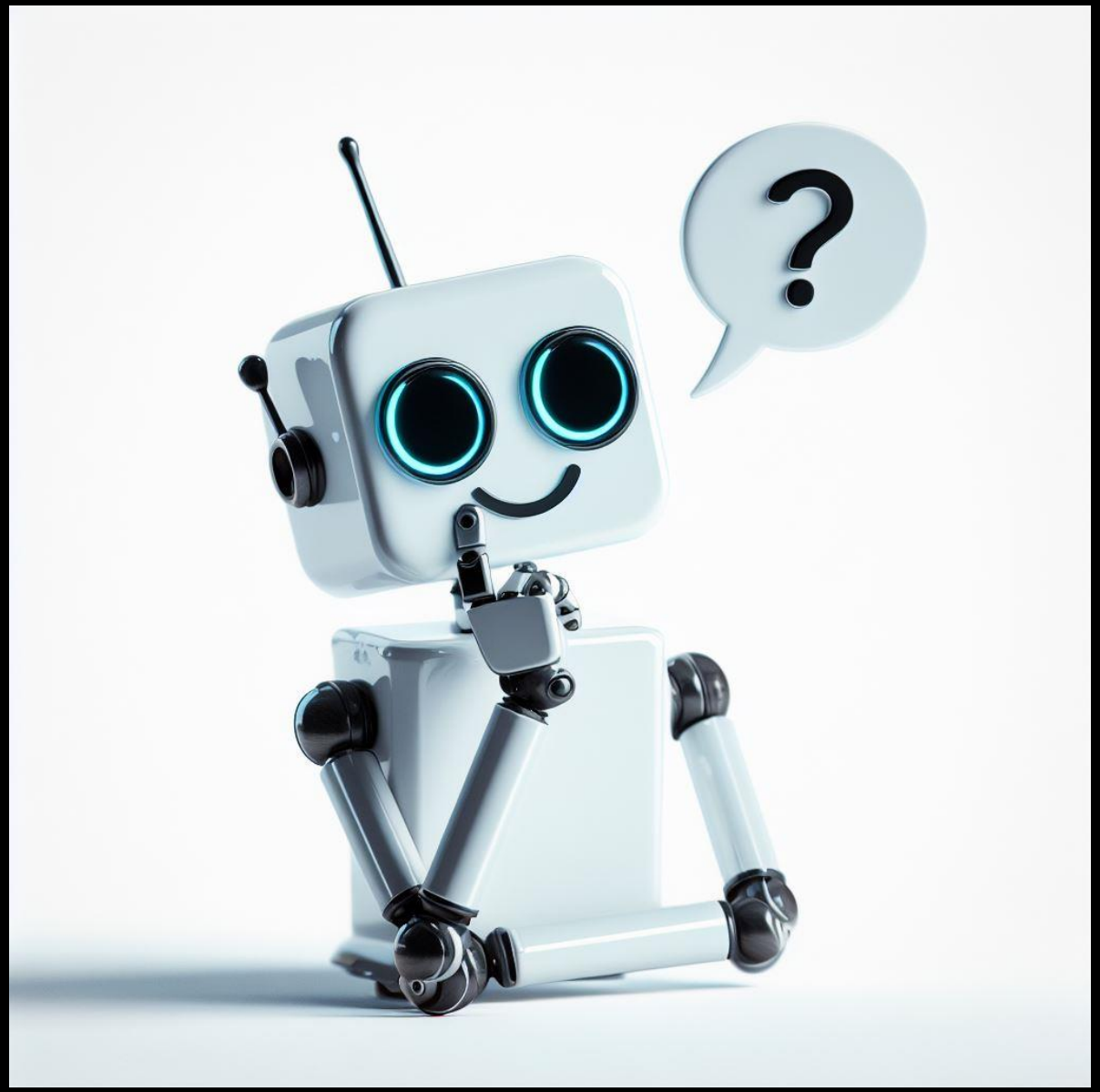


GenAI chatbots are a new kind of experience for a lot of people



GenAI LLMs (large language models) learn how to generate content by looking for patterns and stylistic differences in vast datasets of texts.

GenAI chatbots are designed to mimic human conversation.



It’s interesting to wonder –

Can this new technology help us to think in ways that were previously impossible or impractical?

Can we invent tools that help us to leap-frog into these new cognitive processes?

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Talks on the summer school site

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STFC Astronomy and AI

Case Study

Machine learning in exoplanet characterisation

Ingo Waldmann

UKRI Science and Technology Facilities Council

UCL

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Case Study

Using machine learning to find gravitational lenses & how it can go wrong

Josh Wilde

UKRI Science and Technology Facilities Council

The Open University

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Case Study

Forward-modelling the Universe with neural density estimation

Benjamin Joachimi

UKRI Science and Technology Facilities Council

UCL