



Embedded Ethics:

CSC401:
Anthropomorphization
(Module 1)



Part 1:
Introduction

Welcome to Embedded Ethics!

This embedded ethics module is a collaboration between **philosophy** and **computer science**.

A goal of embedded ethics is to give you the skills and incentive to recognize ethical issues that arise in the development of software and to integrate ethical considerations into your work and research as computer scientists.

Welcome to Embedded Ethics!

This module contains discussion questions and group activities, but also feel free to ask questions or make comments by raising your hand.

In CSC401 you have been working with computational and statistical models of language.

These models are a building block for synthesizing new text or speech:

- LLMs
- Language translation
- Speech (synthesis)

A system that has features that make it appear to be human is **anthropomorphic**.

Anthrōpos = human
Morphē = form

When creating programs that produce text or speech, you have a choice:

- Should you anthropomorphize the created text or speech?
- That is, should you make it **seem human**?

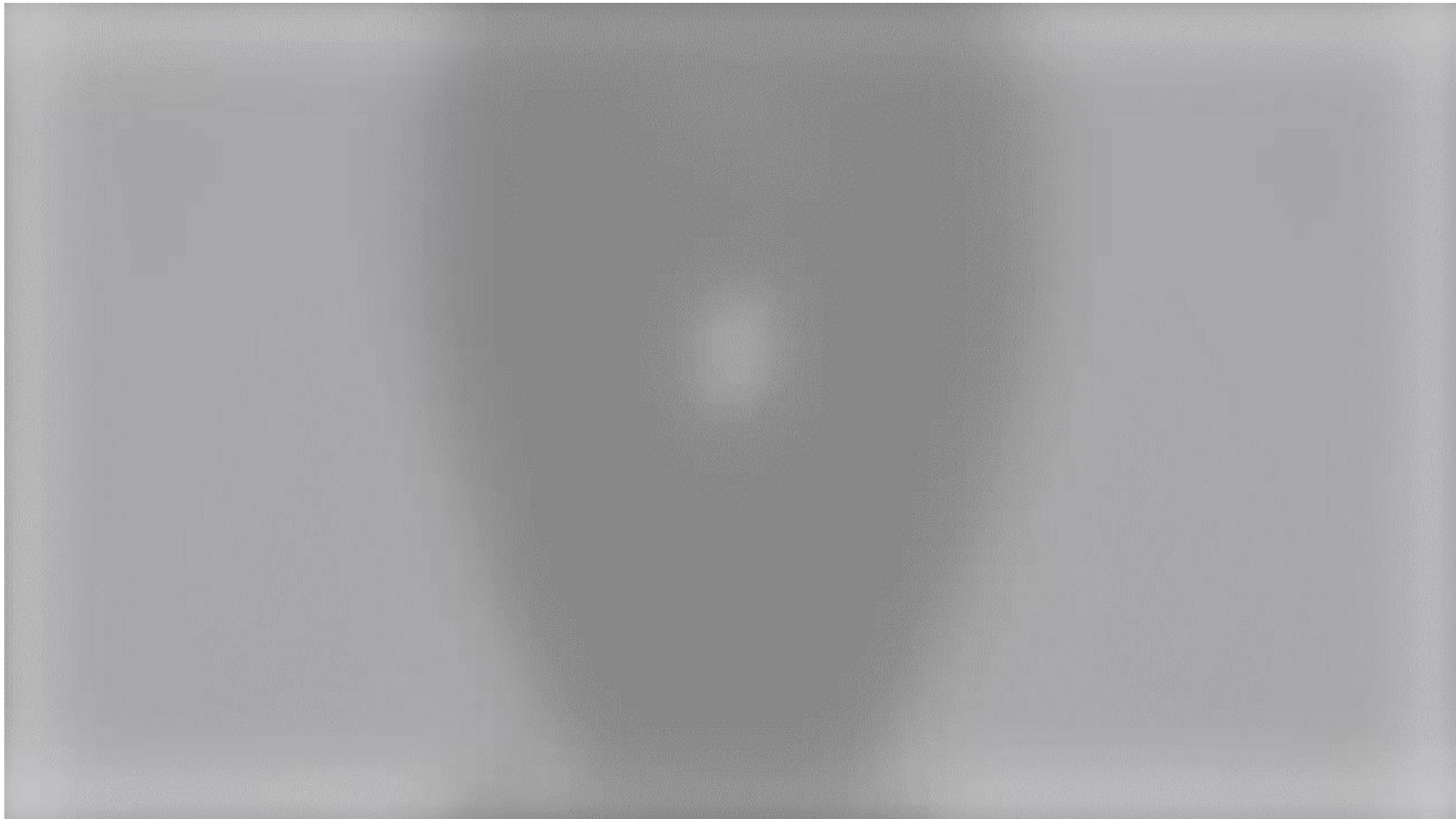
Today, we are going to help you understand:

- How to incorporate anthropomorphic techniques into natural language systems.
- Some of the benefits and risks of anthropomorphizing systems



Part 2:

Anthropomorphic Cues



What makes an auditory clip seem more or less human-sounding?



Voice

- Accent or tone: some ways of speaking register as more “human” sounding
 - Warmth
 - Breathiness



Voice

- Disfluencies: elements that break the flow of speech
 - Pauses
 - Repetitions
 - Filler words (e.g. “um”)



Question for Discussion

What are some elements of **written text** that make generated text seem to be authored by a human?



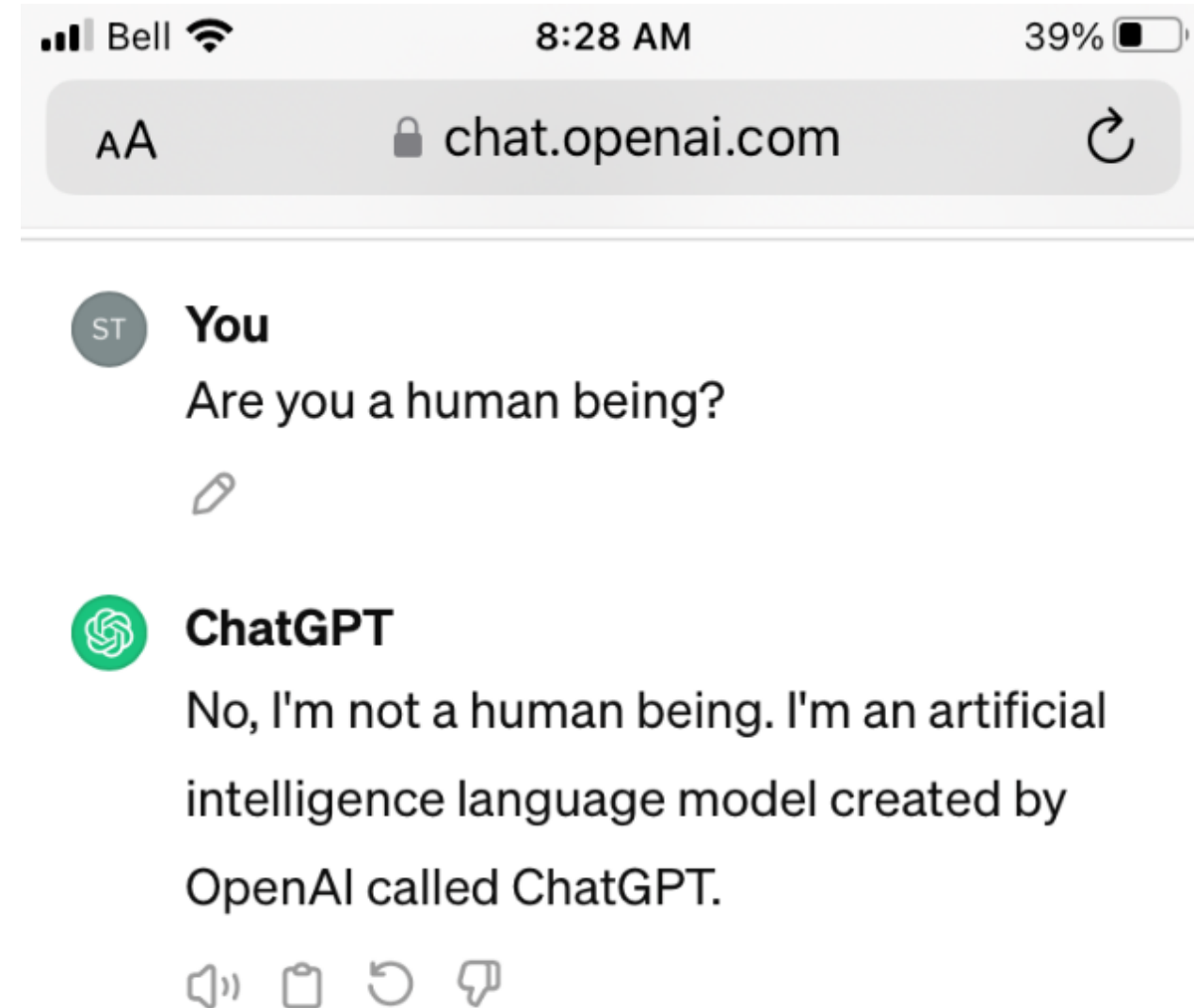
Register and Style

- Slang or informal speech



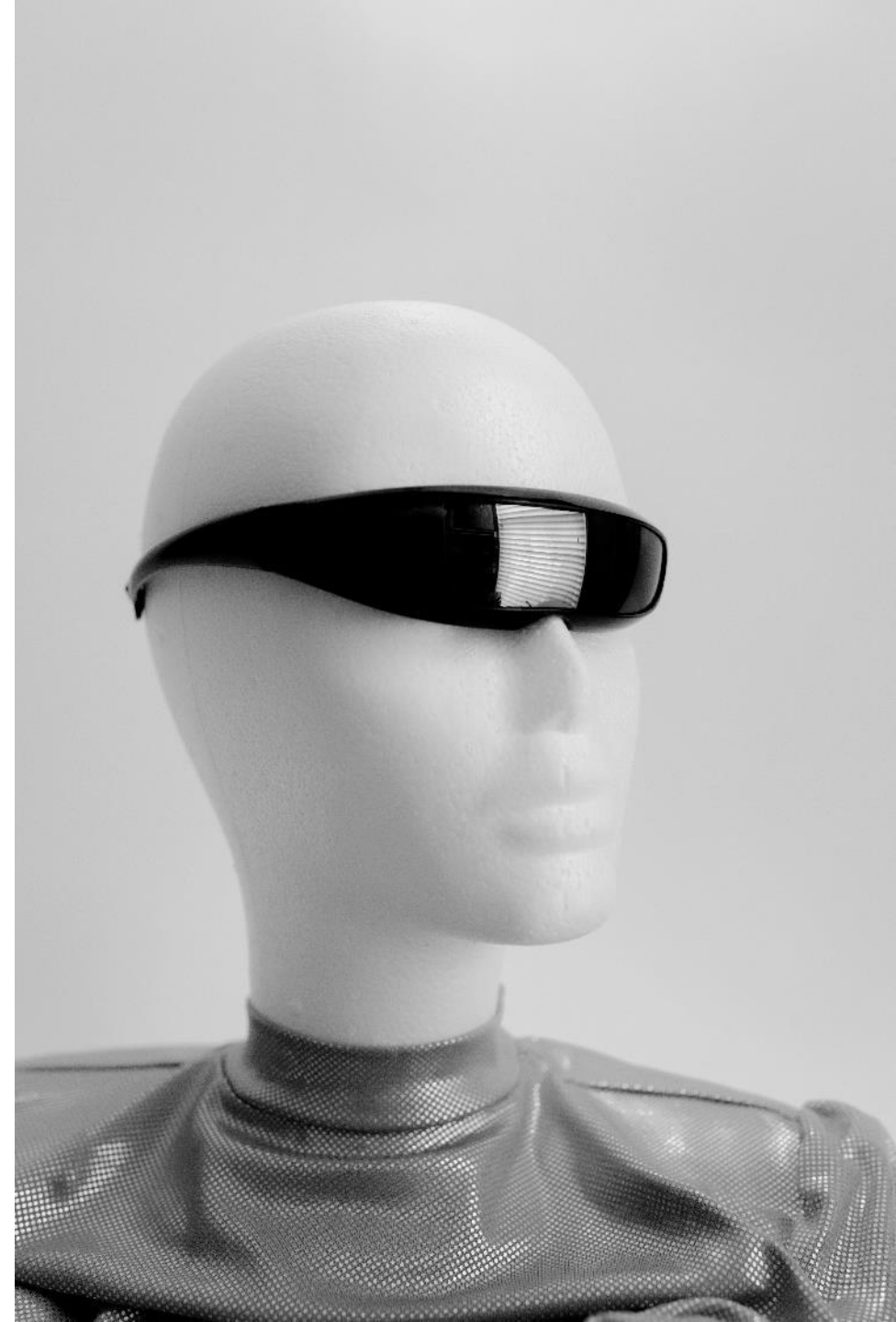
Content

- How the system answers questions about itself
- The information that the system spontaneously offers about itself



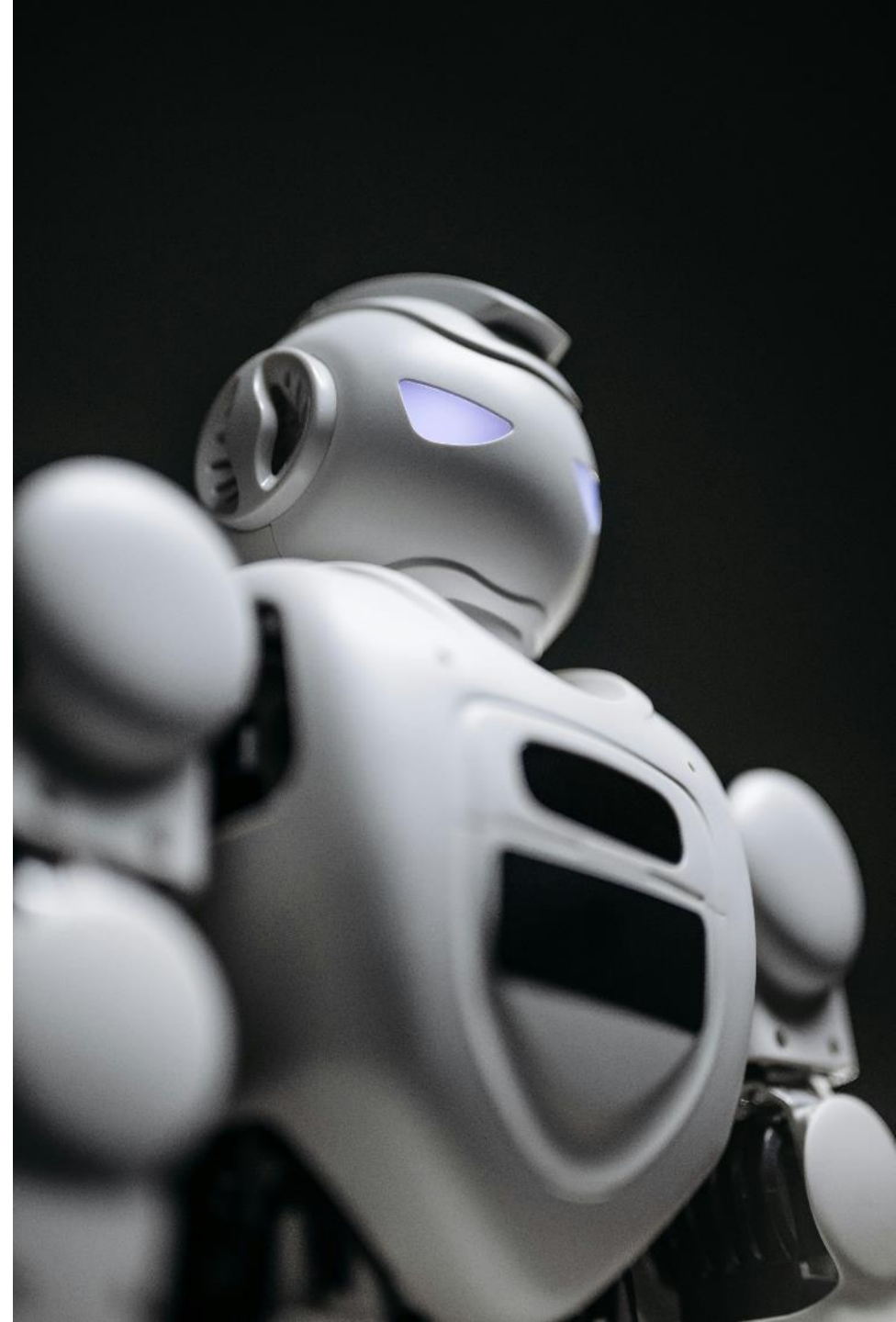
Content

- Use of first-person “I”, “me”, etc
- Implicit or explicit claims of having certain capabilities (e.g. having a personality, emotions)
- Explicit claims of being human (e.g. “I am human.”)



Embodiment

- We treat systems with human faces and bodies as more human-like





Our bag of anthropomorphic
cues/techniques

Question for Discussion

What are some cases where a designer might want to anthropomorphize generated text or speech?





Part 3:
Effectance

Epley et al., 2007:

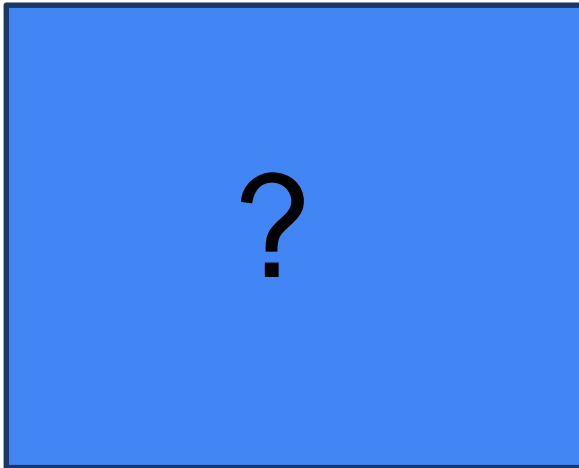
As humans, we naturally tend to treat things as human, even when we know they are not human.

Our tendency to do so has two origins:

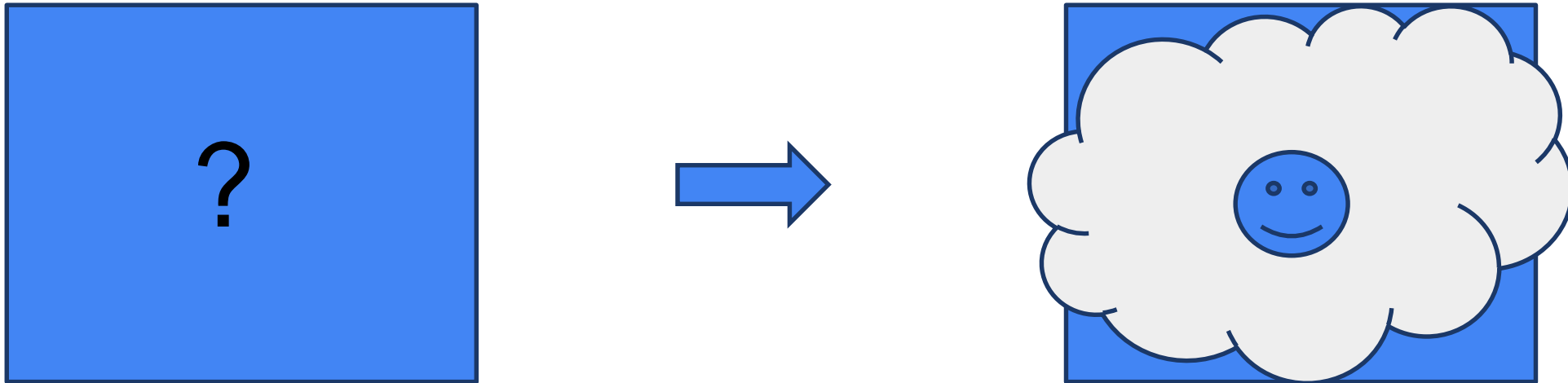
- Effectance
- Sociality



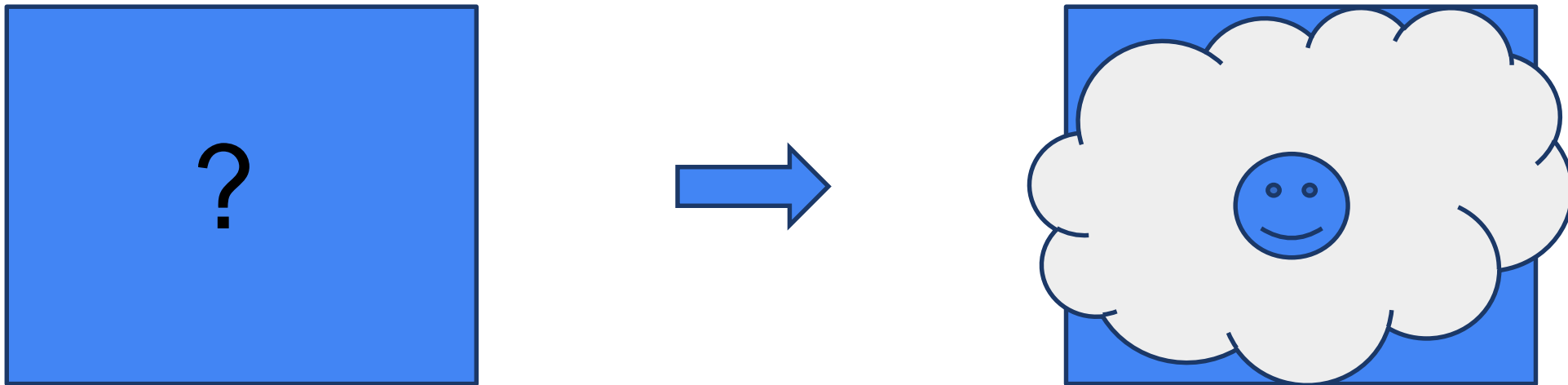
Sometimes we encounter systems that we don't fully understand: we don't know how they will behave.



We **model** these unknown systems: we treat them like things that we better understand. This helps us make predictions about how they will behave and how we should interact with them.

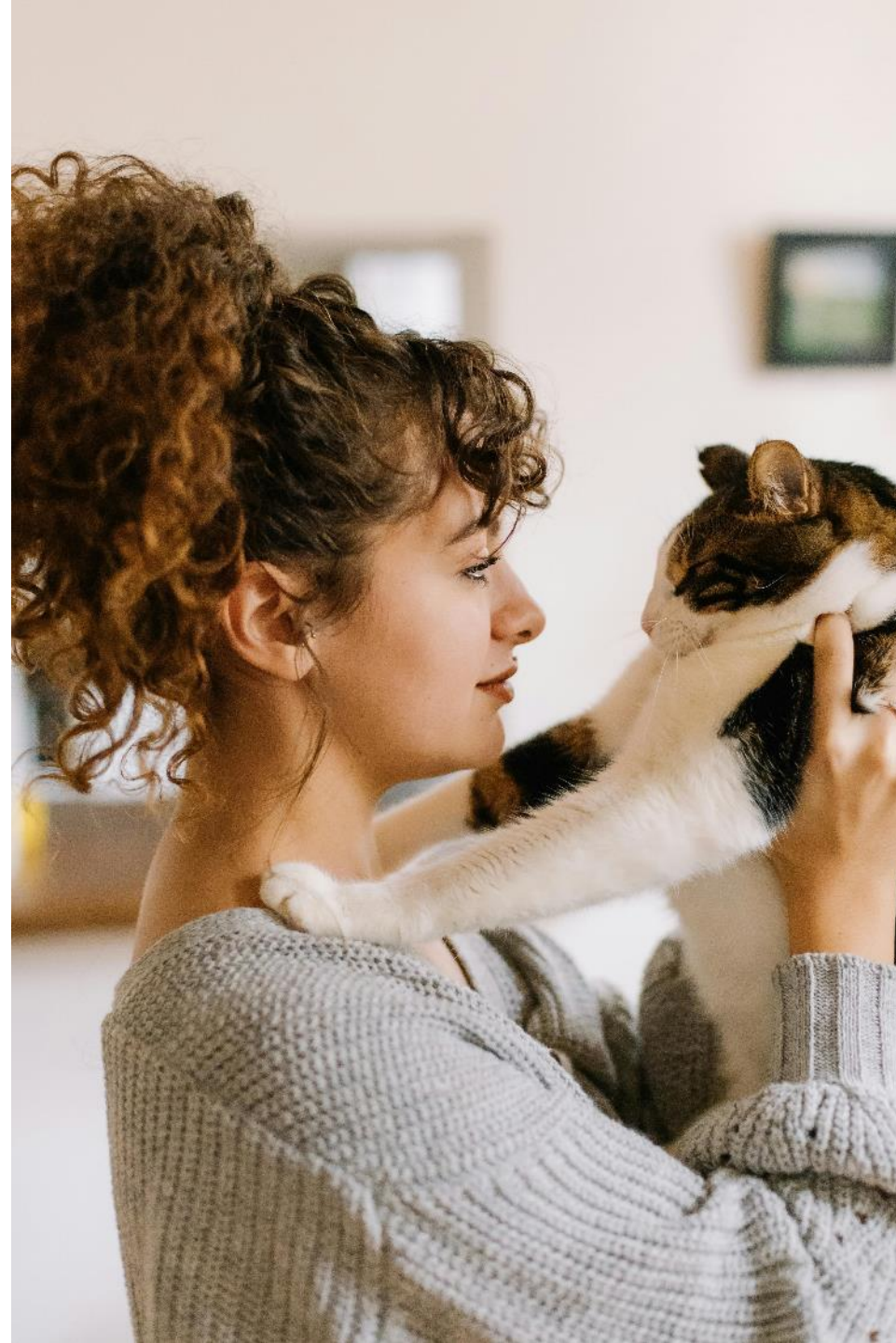


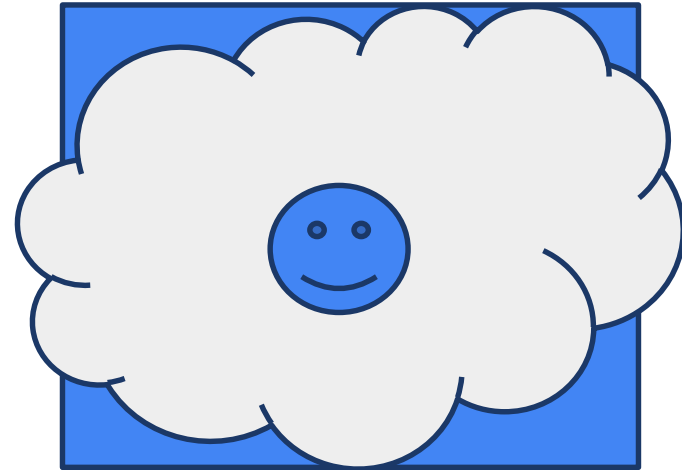
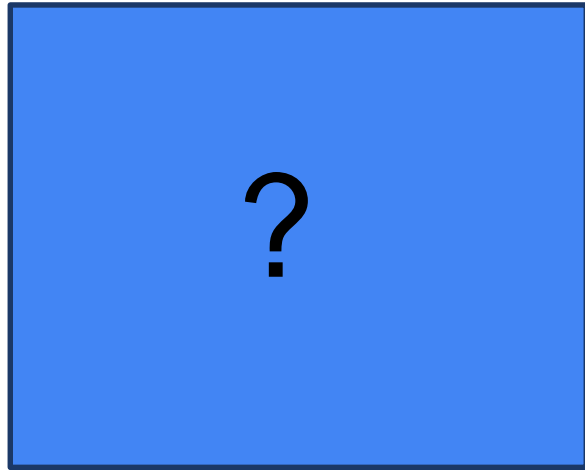
We **model** these unknown systems: we treat them like things that we better understand. This helps us make predictions about how they will behave and how we should interact with them.



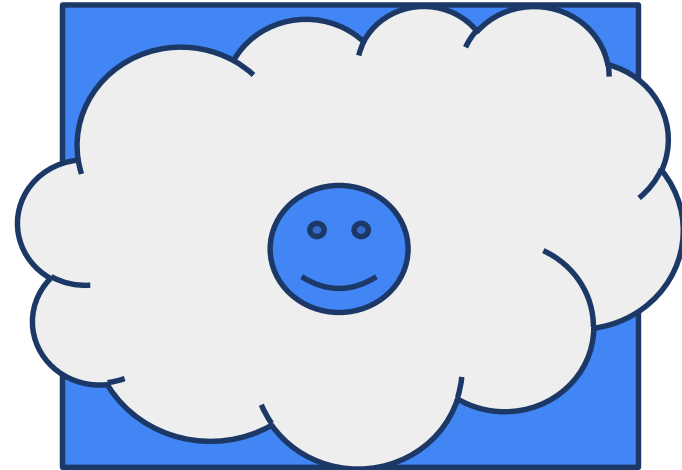
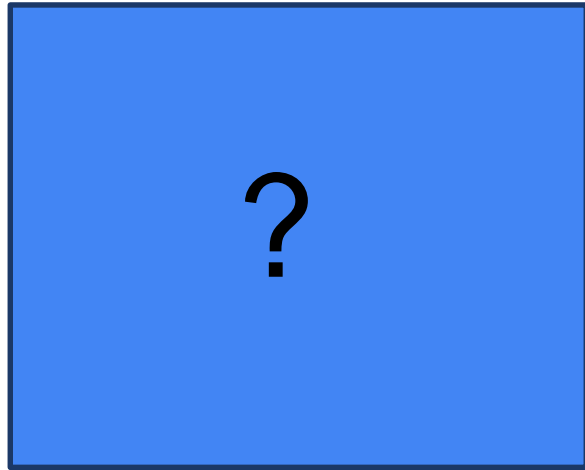
To be clear: when we model unknown systems, we usually **know** that the unknown system is not what we are modelling it as!

This applies to the case of pets,
too!

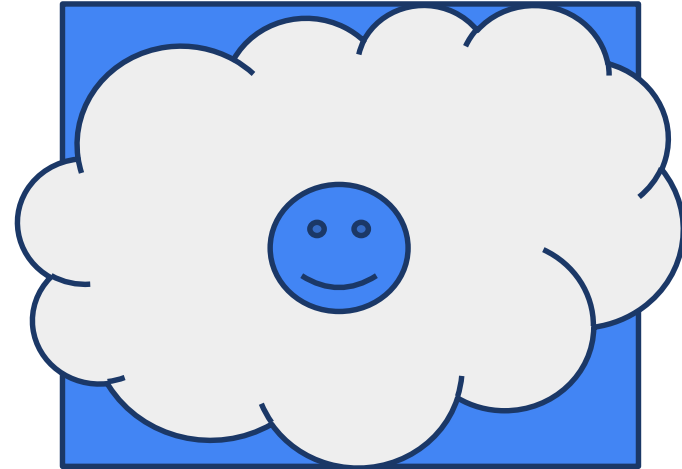
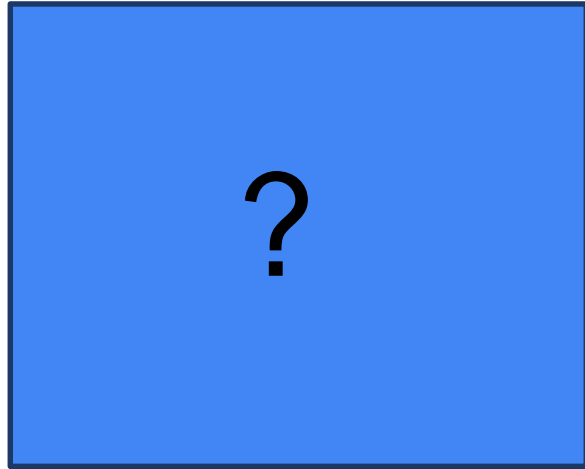




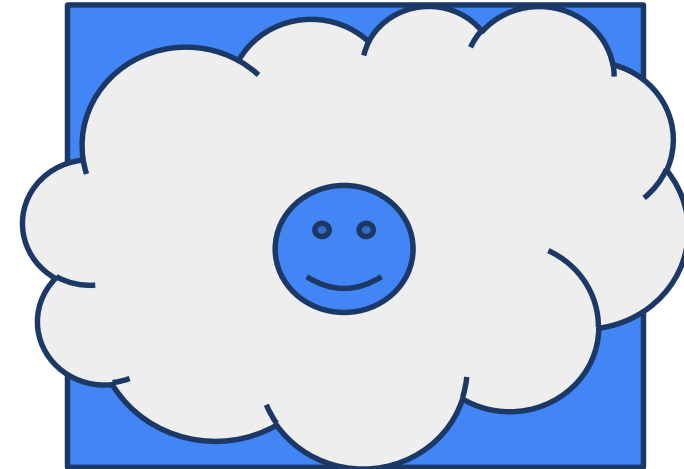
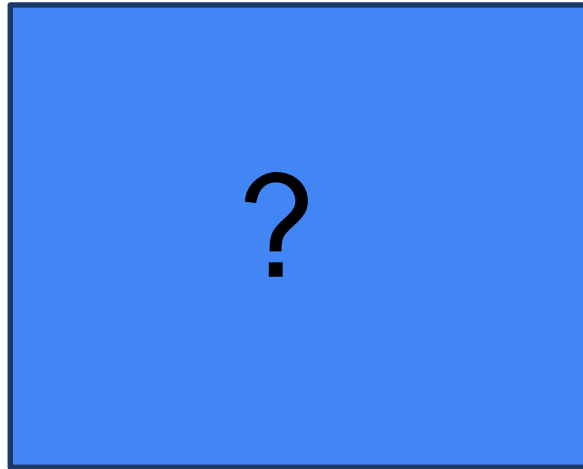
If we model a system as a human being, we tend to attribute some uniquely human abilities to it.



Question: What are some abilities that humans uniquely have?



Memory
Emotions
Rational inference
Ability to understand
questions



When the modelled system actually has these capabilities, this can **assist** the user in using the system.

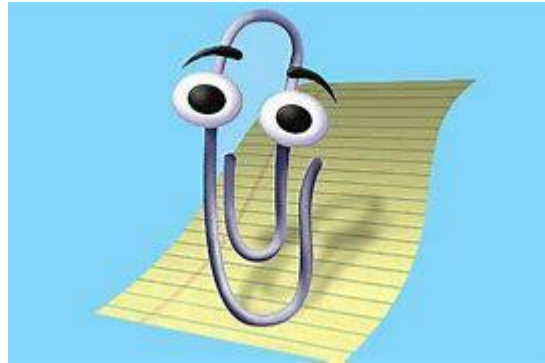
Memory
Emotions
Rational inference
Ability to understand questions

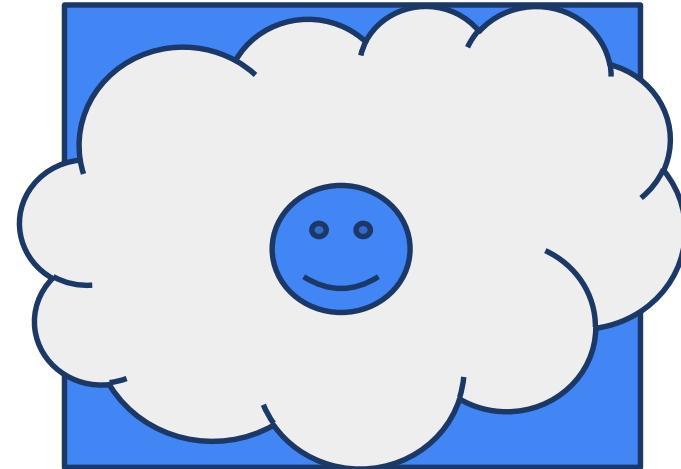
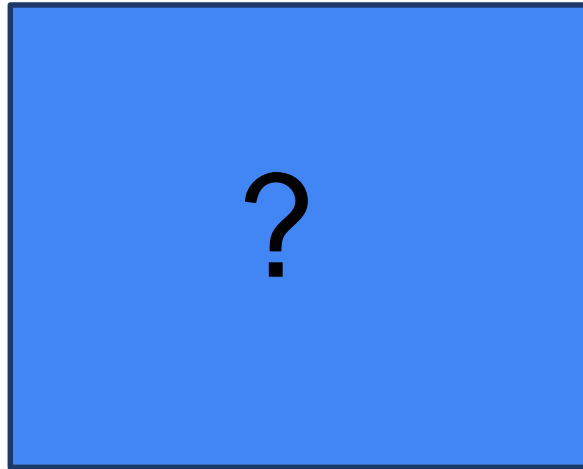


Multilingual smart search

Experience accurate, fast, and clean multilingual searches, making your web exploration safer and hassle-free.

Search the web



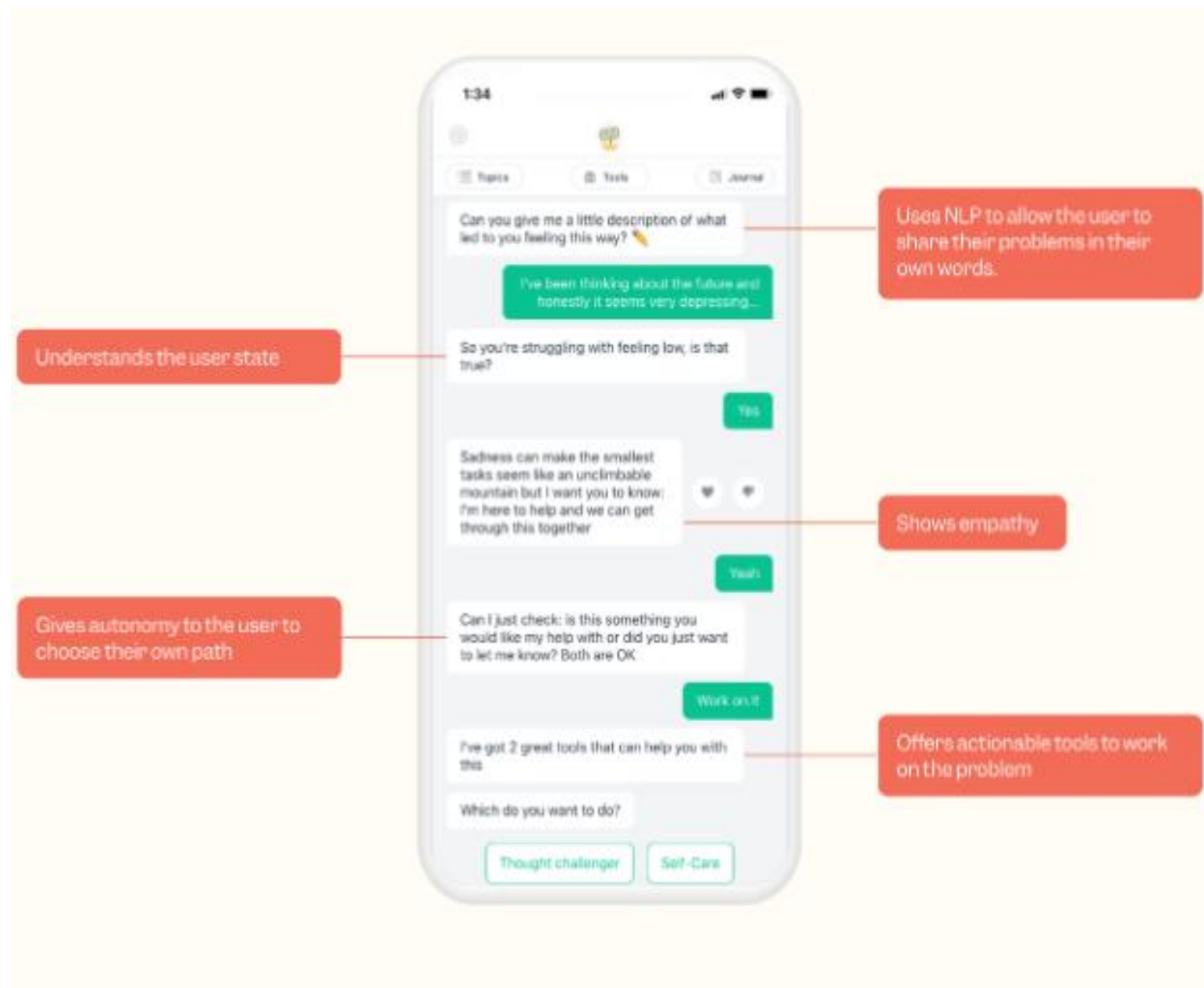


When the modelled system does not actually have these capabilities, this can **harm** the user.

Memory
Emotions
Rational inference
Ability to ask questions

Group Activity: Therapy bots (Woebothealth.com)

1. What capabilities might a user assign to the chatbot that they wouldn't assign to google search?
2. Which of those capabilities would the chatbot likely have, and how could that assist the user?
3. Which of those capabilities would the chatbot not likely have, and how could that harm the user?



Human capability a user might attribute to an anthropomorphized therapy chatbot	Does the chatbot have it?	Potential harm or benefit



Part 4:
Sociality

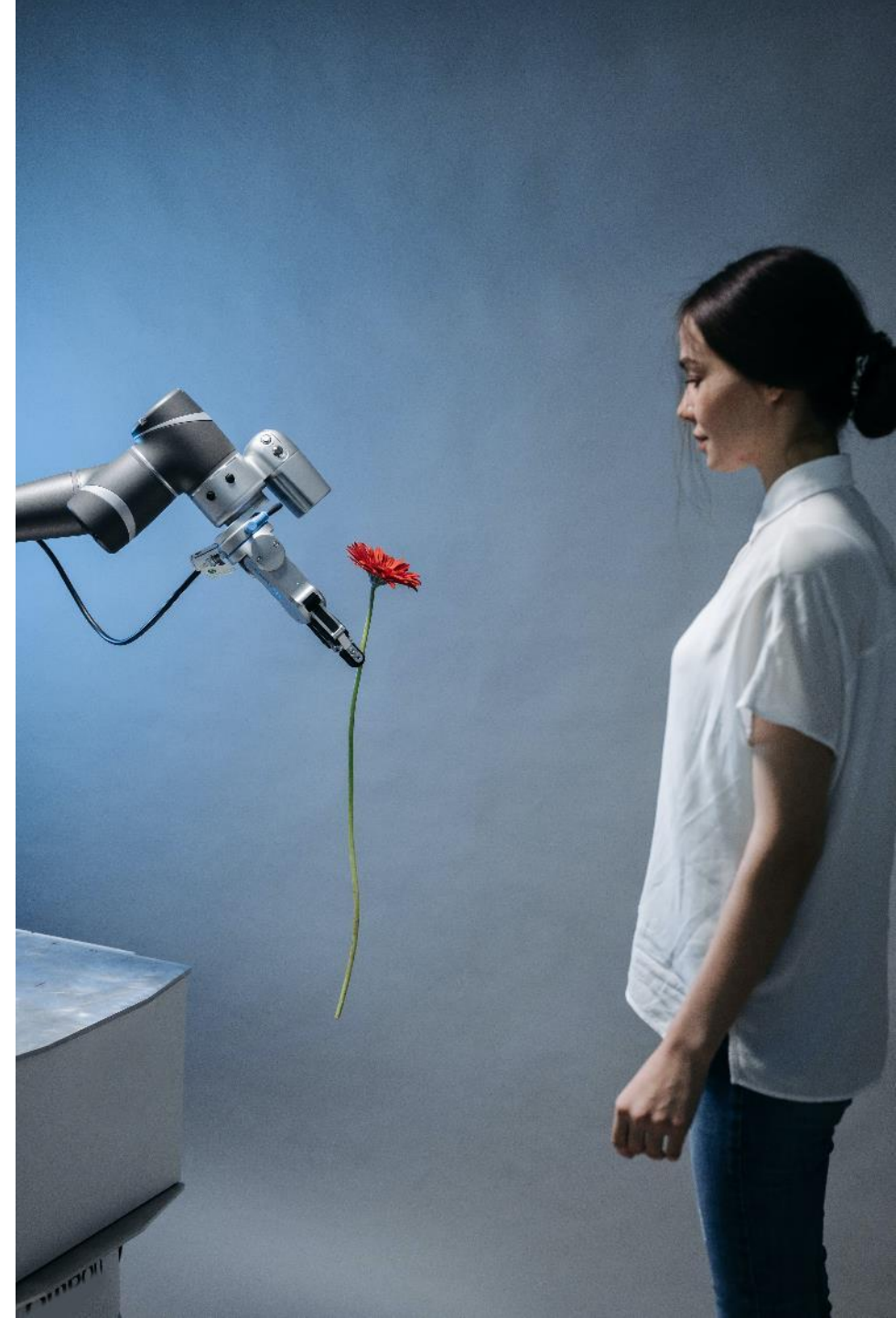
Activity 2

So far we have been talking about what assumptions we tend to make about systems with human characteristics.

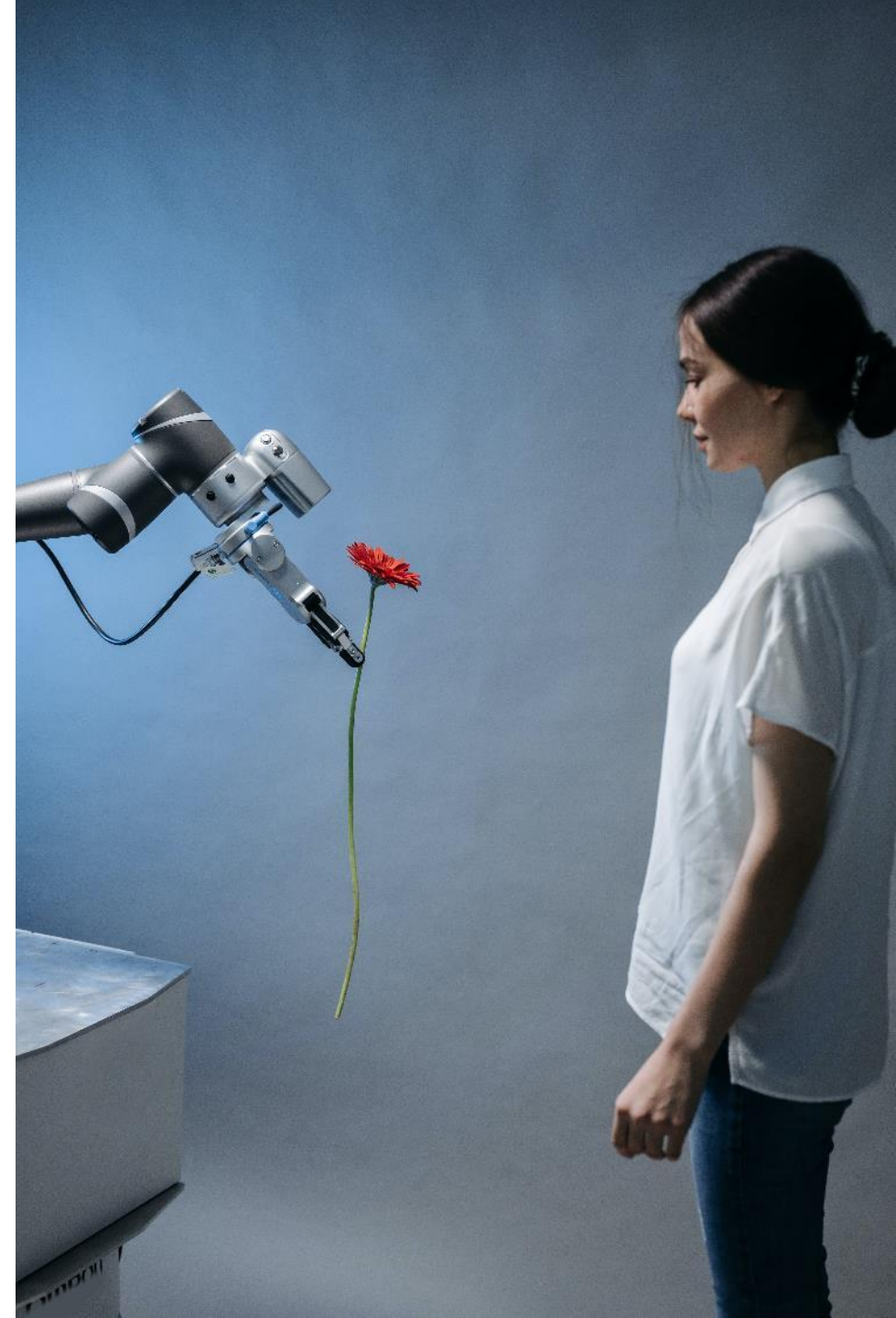
What attitudes do we tend to take towards them?



Sociality: we mentally construct systems as humanlike to fulfil a need for social connection. (Epley, 2)



Users are more inclined to trust systems with which they feel a social connection.



Question for Discussion

How is our behaviour different towards people we trust than people we don't trust?





Question for Discussion

What is a way that the trust generated by anthropomorphization might be used to benefit the user?





The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle

[Adam Waytz](#)^a  , [Joy Heafner](#)^b, [Nicholas Epley](#)^c

How anthropomorphism affects trust in intelligent personal assistants

[Qian Qian Chen](#), [Hyun Jung Park](#) ▼

[Industrial Management & Data Systems](#)

ISSN: 0263-5577

Article publication date: 31 August 2021

DOWNLOADS



2551

Question for Discussion

What is a way that the trust generated by anthropomorphization might be used to harm the user?





Example: anthropomorphized slot machines (Riva, Sacchi and Brambilla, 2015)

No one is deceived by the anthropomorphization used by these machines.

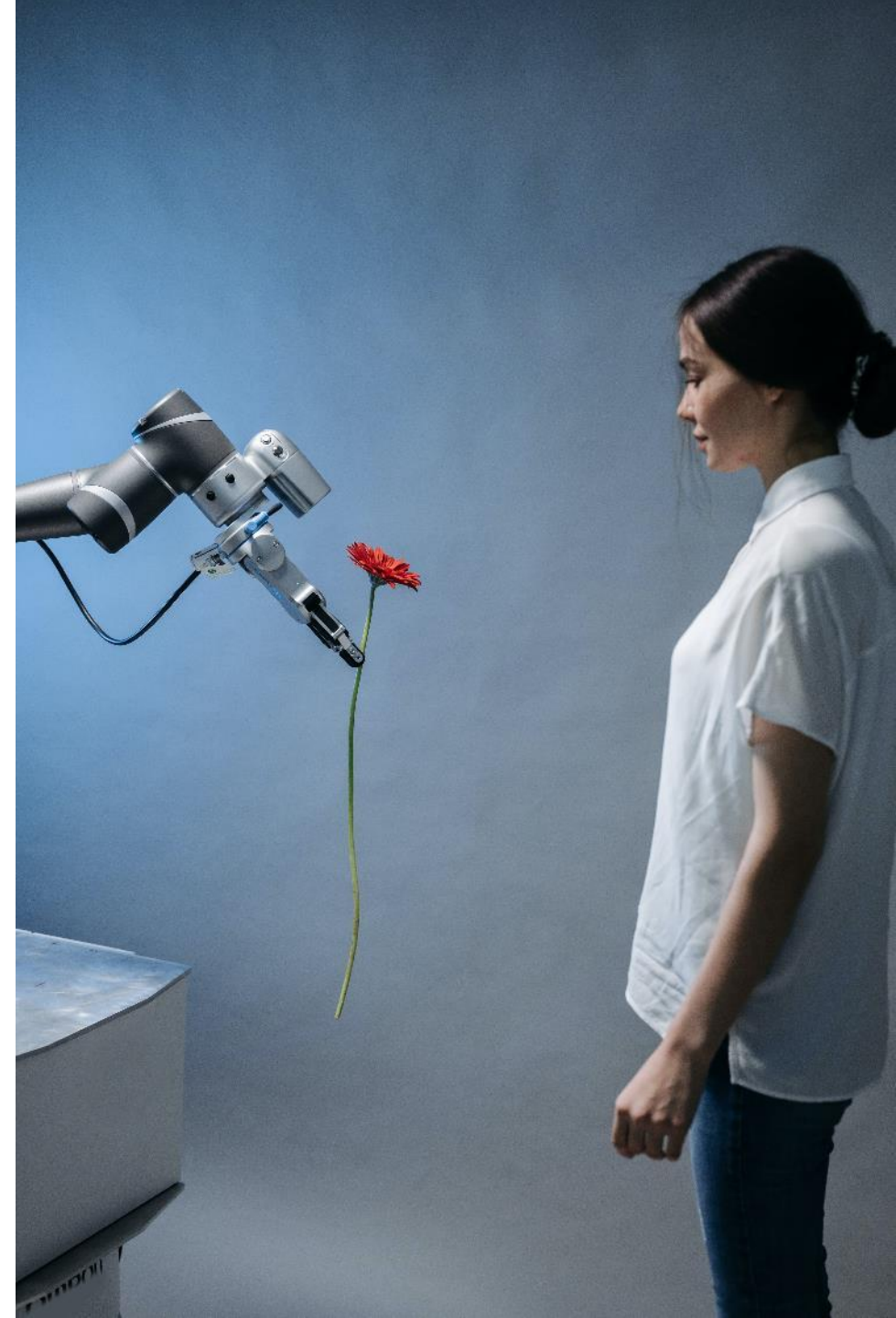
What do you think is going on here?

In module 2....

We will talk about more controversial cases of anthropomorphization:

- Anthropomorphization and intimacy
- The use of anthropomorphization to intentionally impersonate human beings
- Moral and legal rules that should govern anthropomorphism

See you then!



Acknowledgements

This module was created as part of an **Embedded Ethics Education Initiative (E3I)** through the **Department of Computer Science**

Instructional Team:

Philosophy: Steve Coyne

Computer Science: Gerald Penn, Graeme Hirst

Faculty Advisors:

Diane Horton¹, David Liu¹, and Sheila McIlraith^{1,2}

Department of Computer Science

Schwartz Reisman Institute for Technology and Society

University of Toronto



Computer Science
UNIVERSITY OF TORONTO



UNIVERSITY OF
TORONTO





References

- Gavin Abercrombie, Amanda Cercas Curry, Tanvi Dinkar and Zeerak Talat. 2023. “Mirages: On Anthropomorphism in Dialogue Systems”
- Nicholas Epley, Adam Waytz, and John T. Cacioppo. 2007. “On Seeing Human: A Three-Factor Theory of Anthropomorphism” *Psychological Review* 114(4): 864-886
- Adam Waytz, Joy Heafner, Nicholas Epley. 2014. “The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle” *Journal of Experimental Social Psychology* 52: 113-7