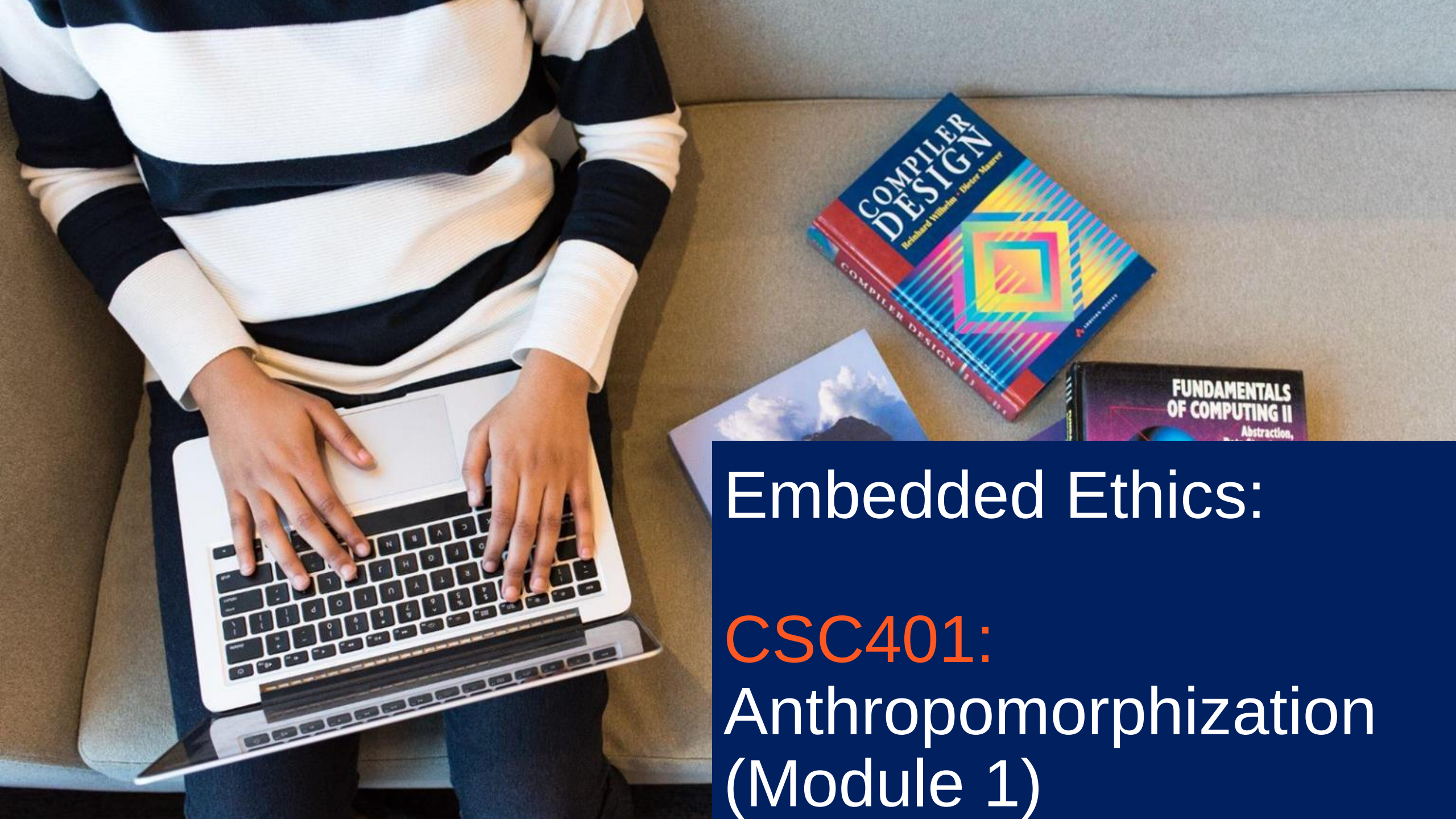


Embedded Ethics:

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

Demo

What are some differences between these voice clips?

FIGURE 01 + OPENAI
SPEECH-TO-SPEECH REASONING

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
  - Hesitations
  - Filler words (e.g. “um”)

Question for Discussion

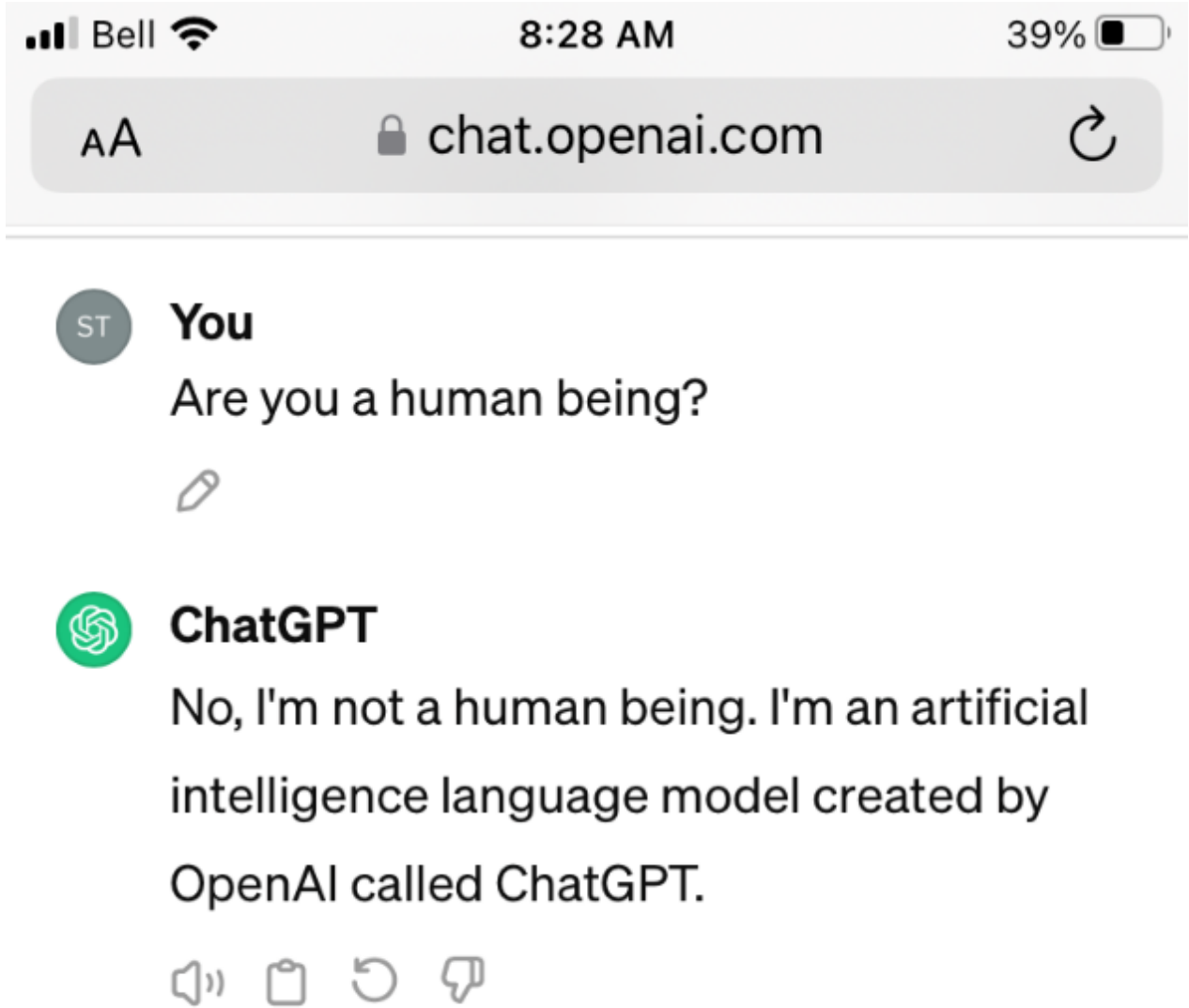
What are some elements of written text that make generated text seem to be authored by a human?

Register and Style

- Slang or informal speech

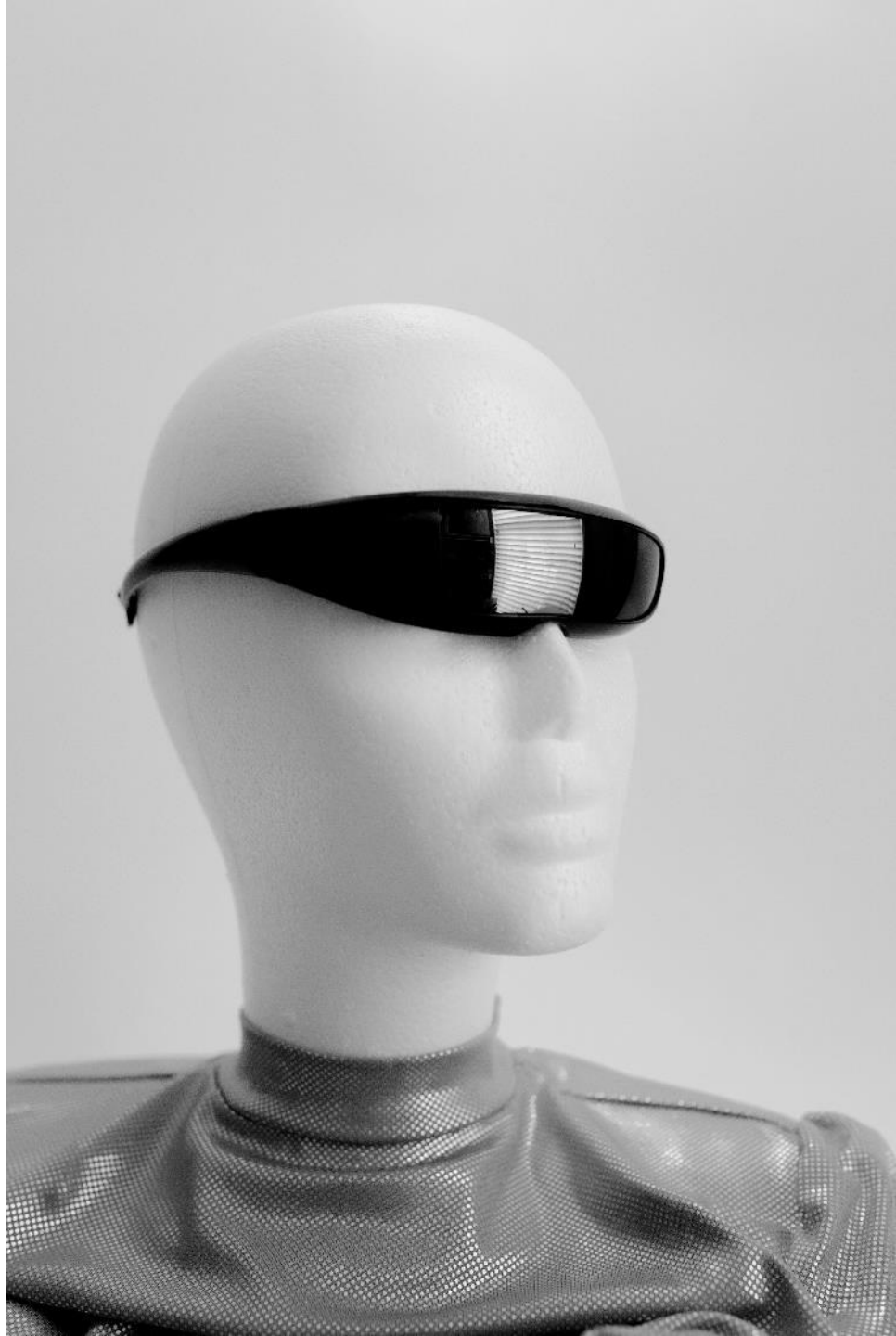
Content

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



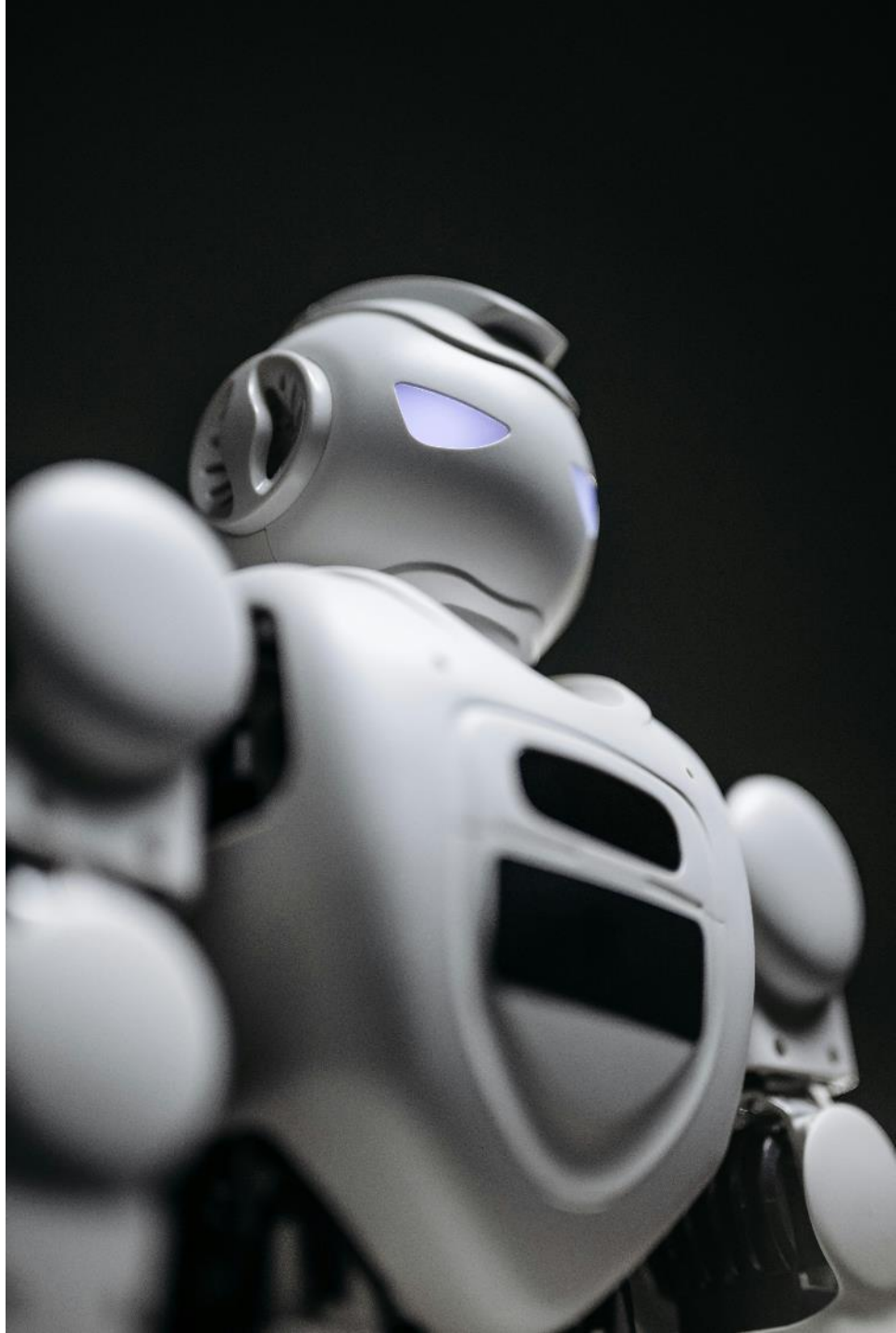
Content

- 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?

(Recall the systems in CSC401: LLMs, speech synthesis..)

Question for Discussion

Why might a designer want to *de*-anthropomorphize generated text or speech?

Part 3:

The Cognitive Origins of Anthropomorphization

Epley et al., 2007:

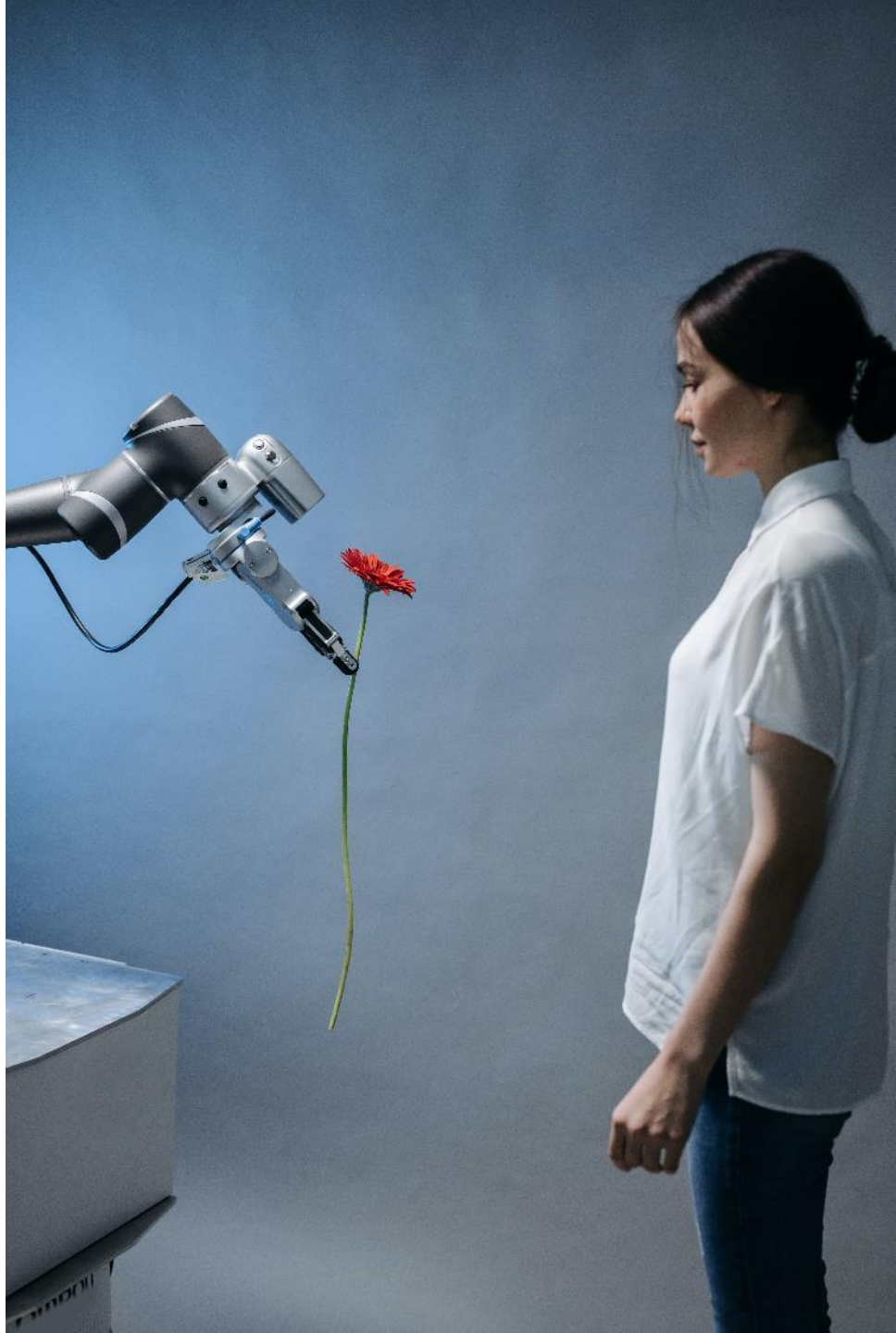
As humans, we naturally tend to treat things as human, even when we know they are not human.

Our tendency to do so has two origins:

- Sociality
- Effectance

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.



An example: pets

Some people treat their pets as human beings, even though they know their pets are not human beings.

Question for Discussion

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

Journal of Experimental Social Psychology
Volume 52, May 2014, Pages 113-117

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
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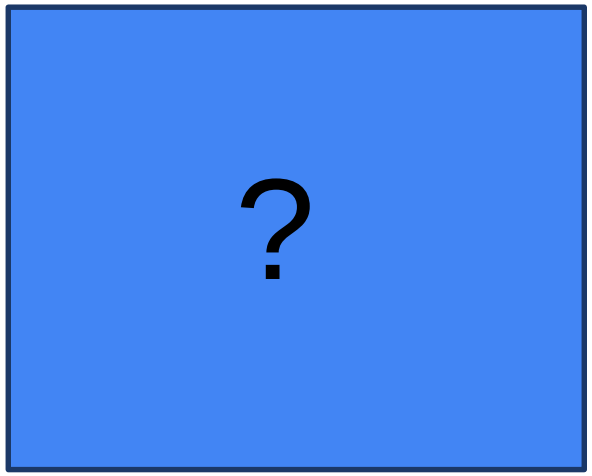
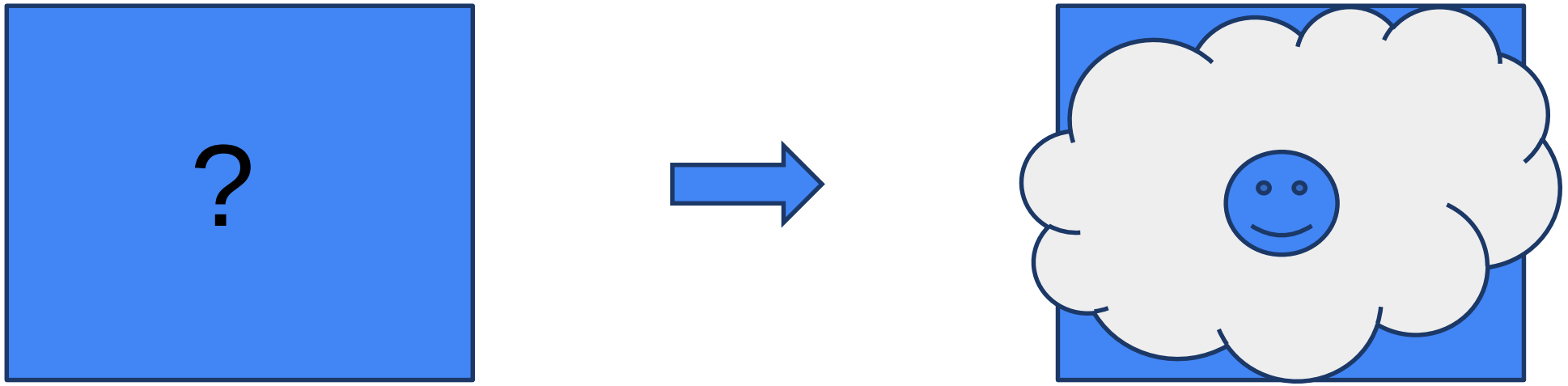
Question for Discussion

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

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.



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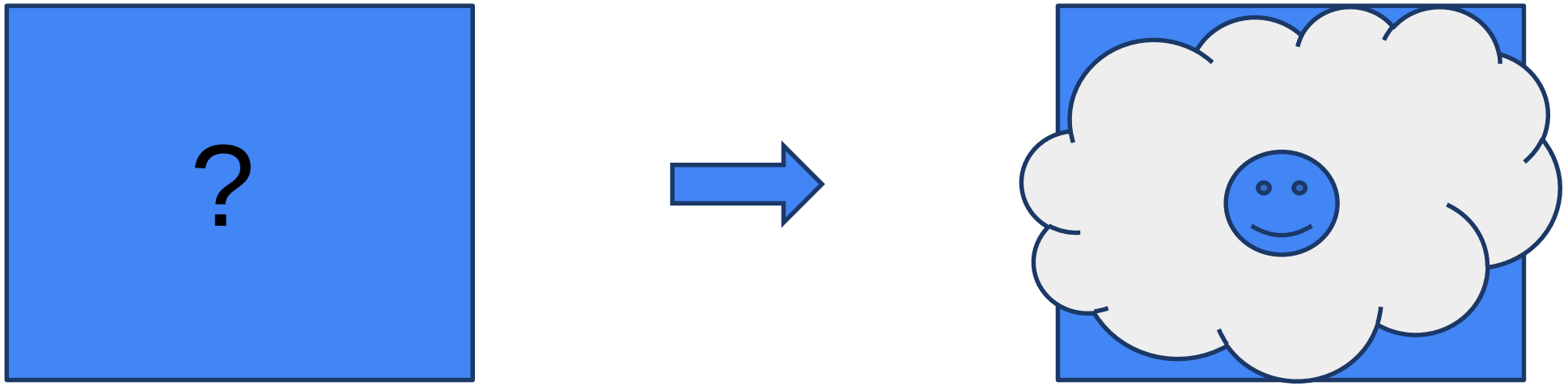
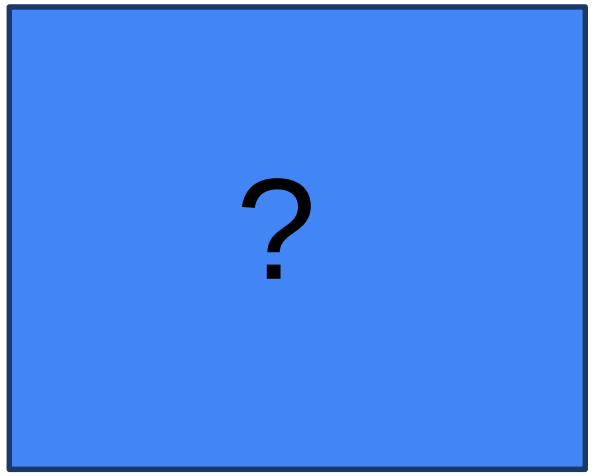
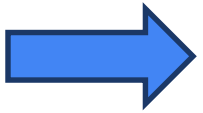
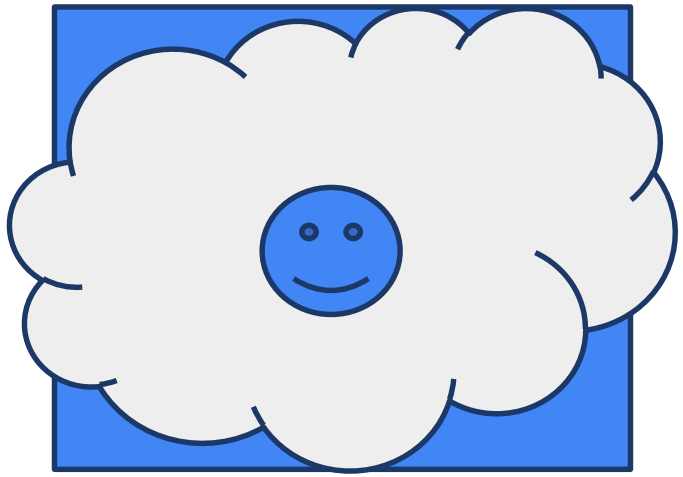


To be clear: when we model unknown systems, we usually know that the unknown system is not what we are modelling it as!

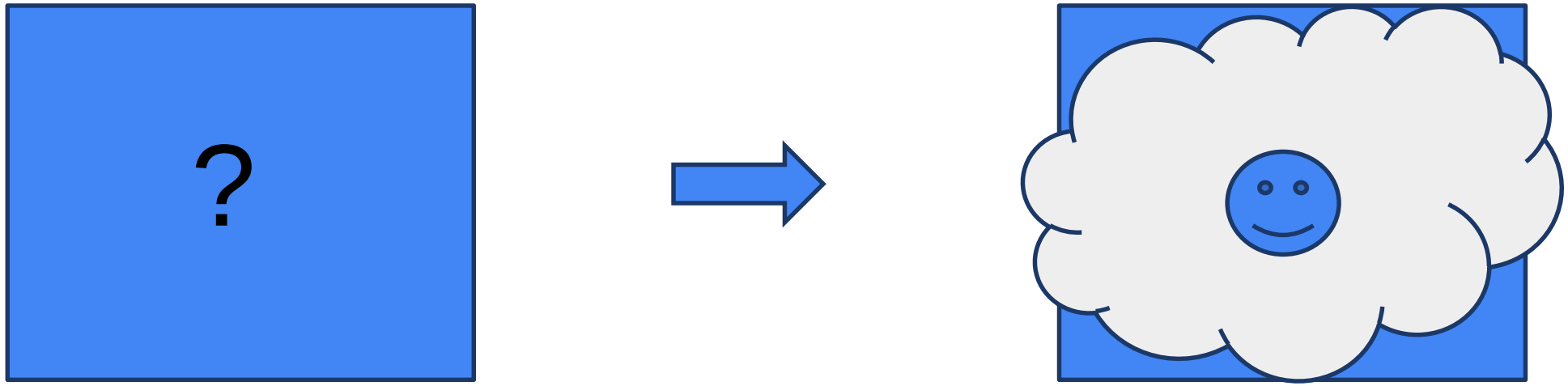
This applies to the case of pets, too!



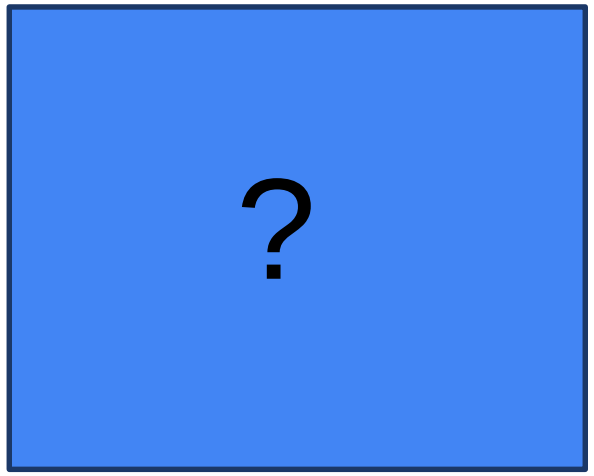


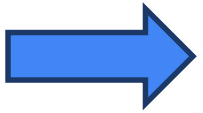


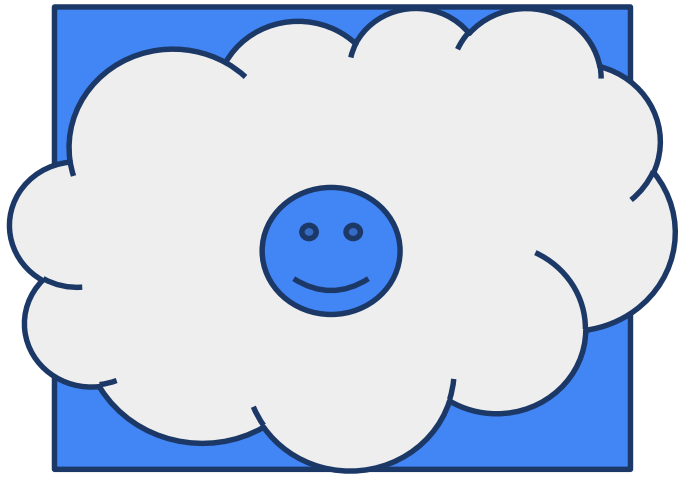
If we model a system as a human being, we tend to attribute some uniquely human abilities to it.



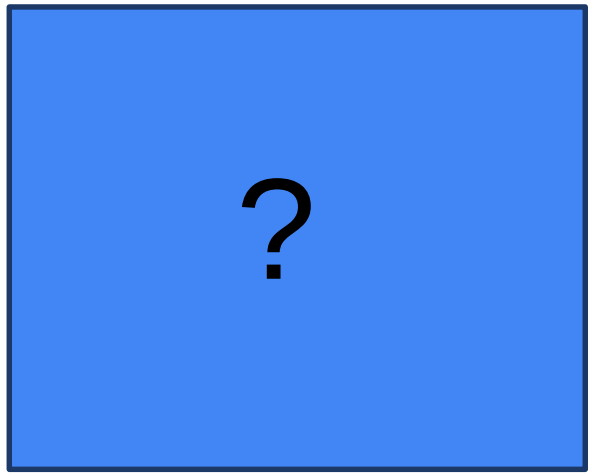
Question: What are some abilities that humans uniquely have?

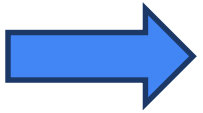


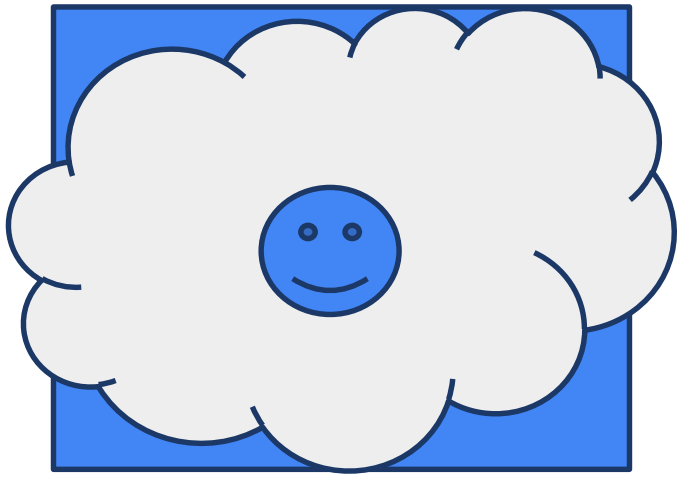




Memory
Emotions
Rational inference
Ability to understand questions

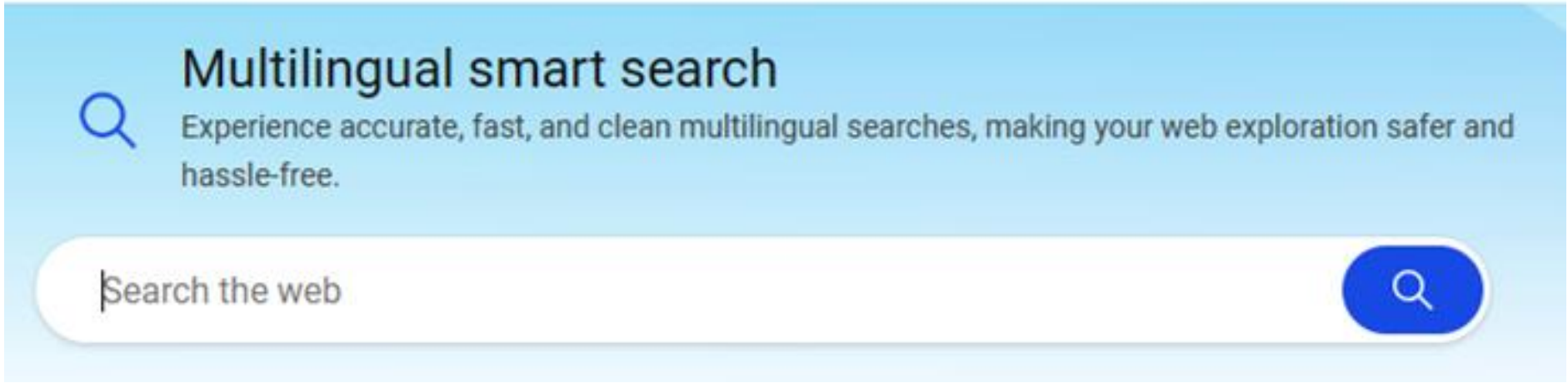






When the modelled system actually has these capabilities, this can **assist** the user in using the system.

Memory
Emotions
Rational inference
Ability to understand questions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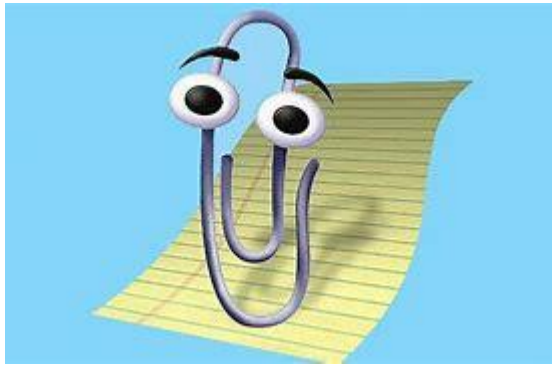
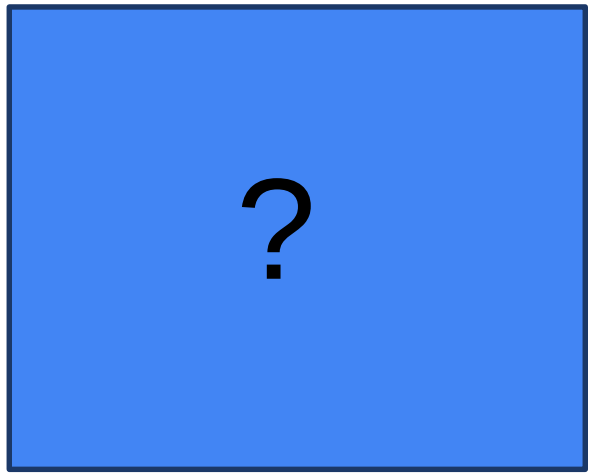
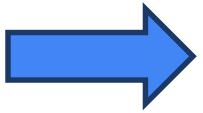
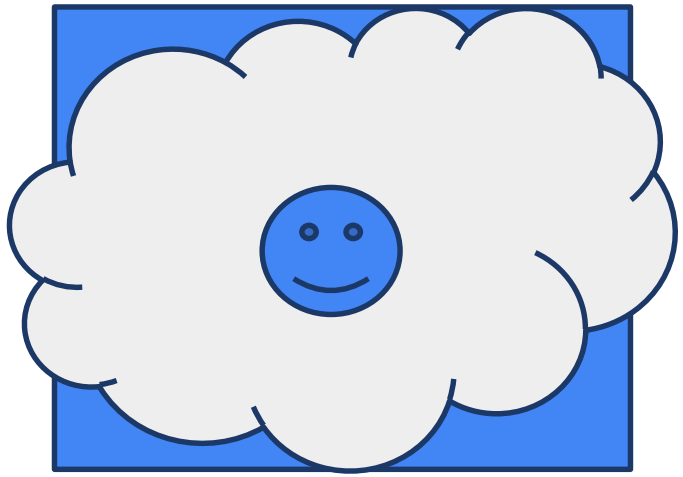
Experience accurate, fast, and clean multilingual searches, making your web exploration safer and hassle-free.
Search the web







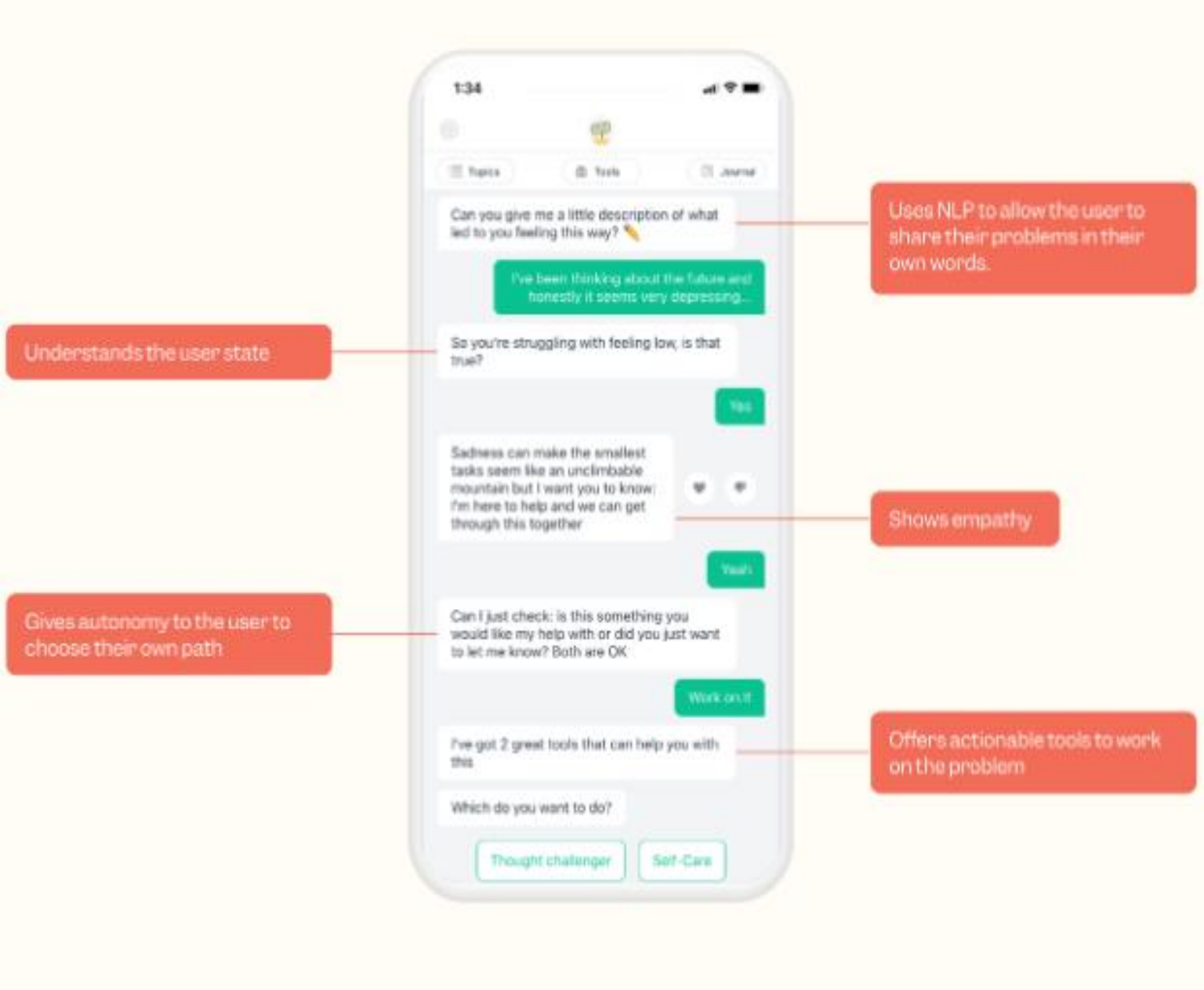


When the modelled system does not actually have these capabilities, this can **harm** the user.

Memory
Emotions
Rational inference
Ability to ask questions

Group Activity: Therapy bots (Woebot.com) vs google searching mental health information

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?



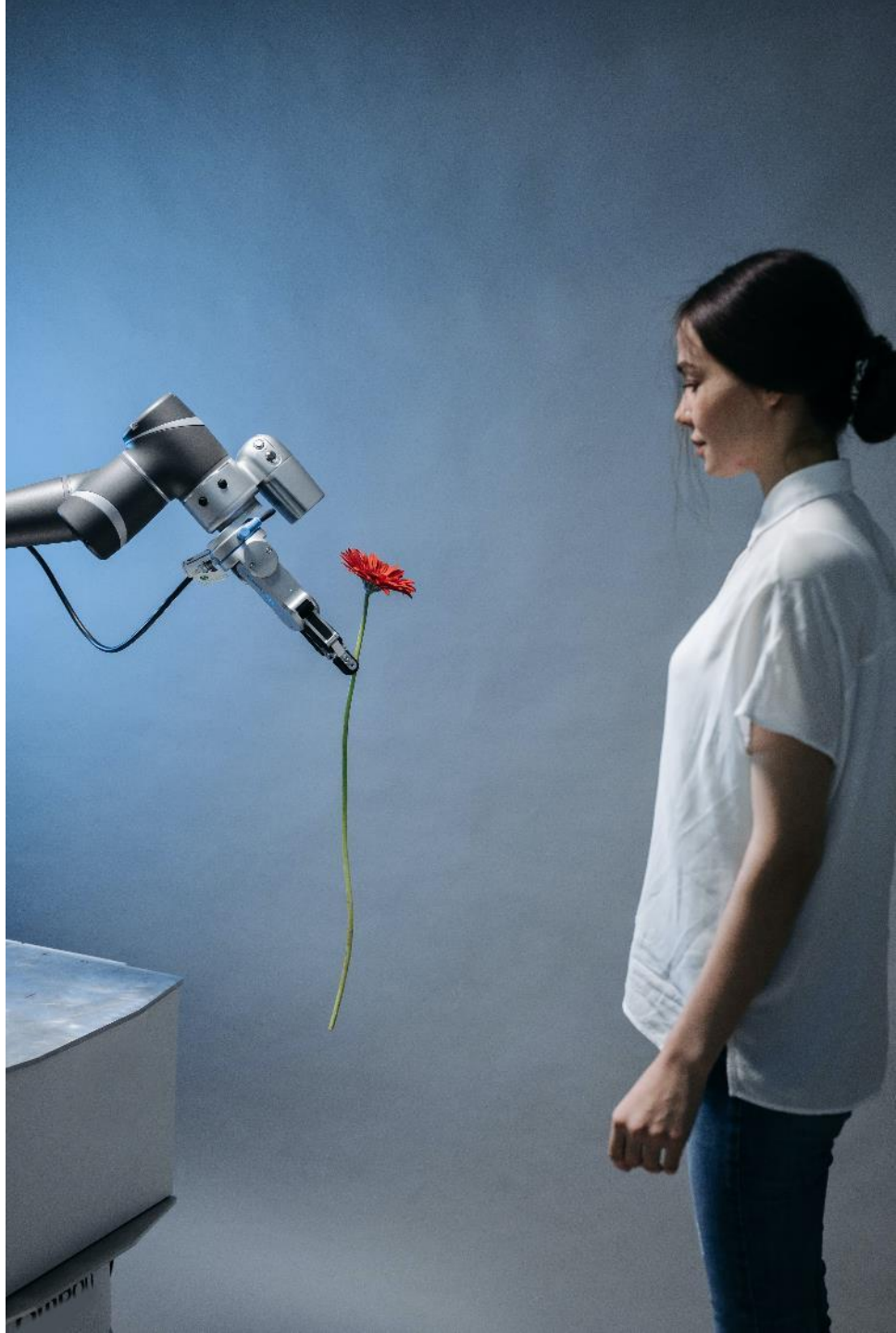
Human capability a user might attribute to an anthropomorphized therapy chatbot	Does the chatbot have it?	Potential harm or benefit

In module 2….

We will talk about the ethics of anthropomorphization in more detail:

- The ethics of using particular anthropomorphic techniques
- The relationship between anthropomorphism and deception
- Moral and legal rules that should govern anthropomorphism

See you then!



Acknowledgements

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Department of Computer Science

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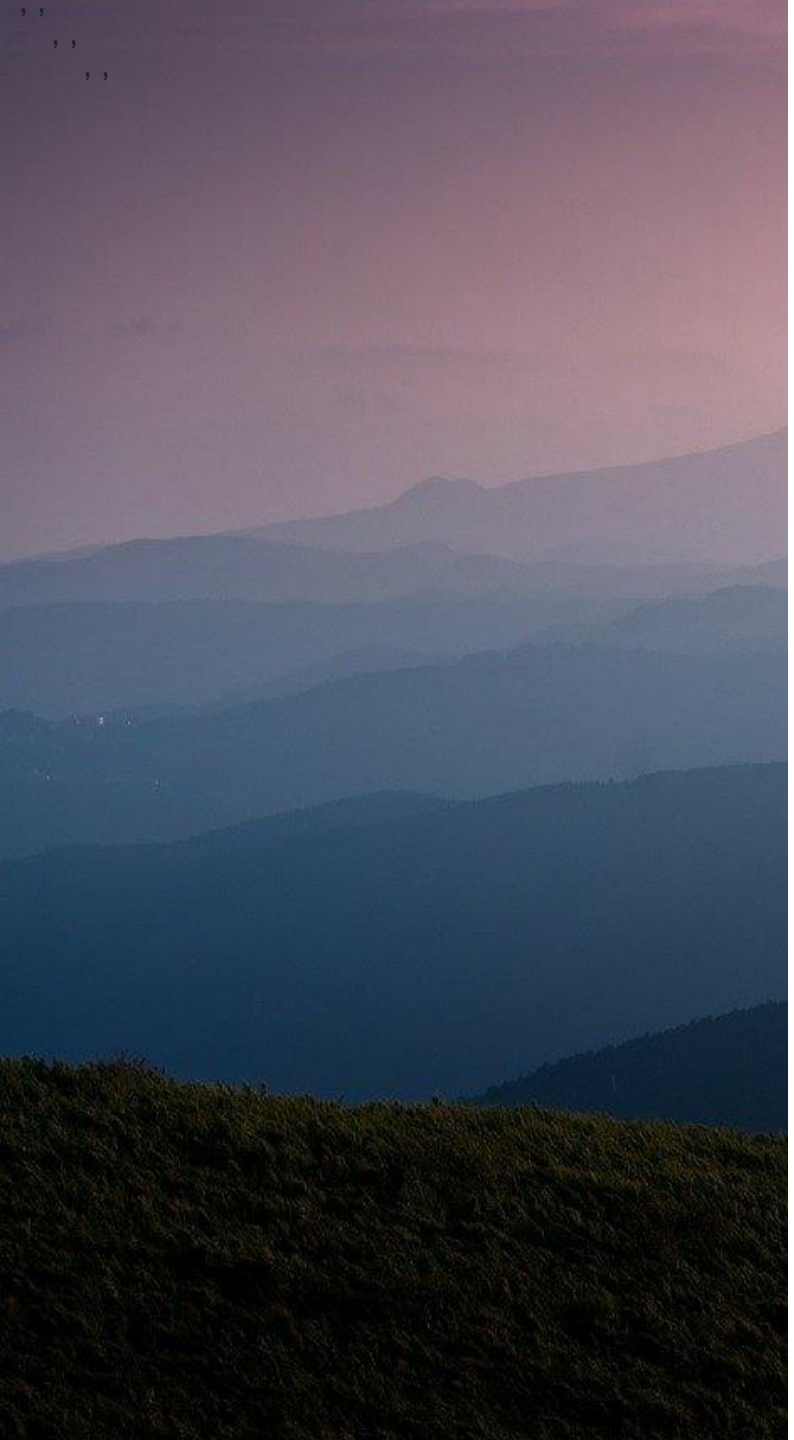
University of Toronto



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