

AI, ChatGPT, and LLMs: Guidance for IBS Faculty, Researchers, and Students

Don Mather, Ph.D. student | Sociology

Grant Matheny, Director of Information Technology | IBS

A photograph of a person with long hair, wearing a striped shirt, looking down in a field. The image is overlaid with the text 'Advancing Knowledge Pursuing Solutions'.

**Advancing Knowledge
Pursuing Solutions**



University of Colorado Boulder

| **Institute of Behavioral Science (IBS)**

Agenda

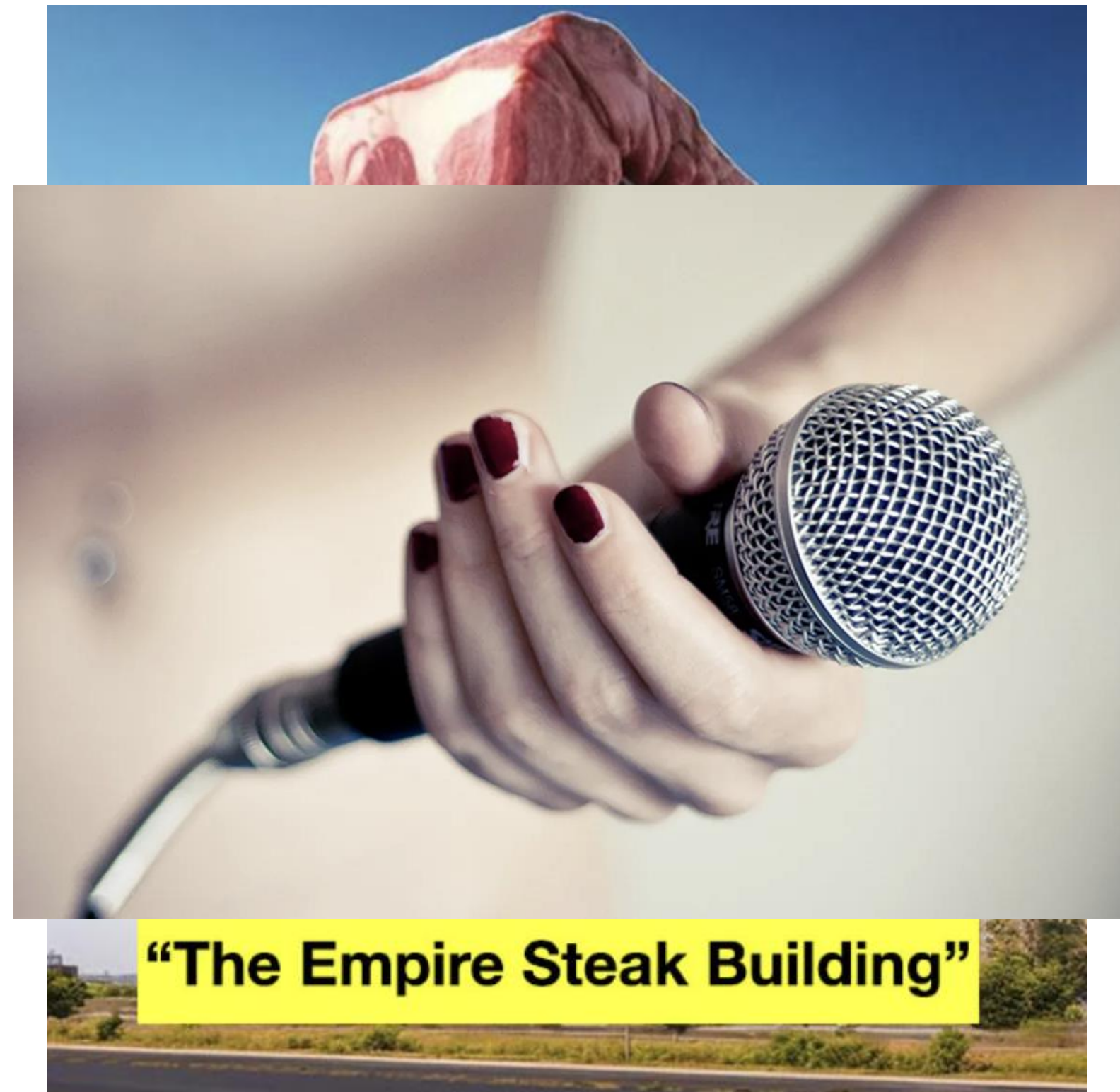
- What are LLMs and ChatGPT?
- How are others using LLMs like ChatGPT?
- Current limitations
- Issues people are talking about
- Issues for educators and researchers to consider
- Where to find out more

What are Large-Language Models?

- Software that uses algorithms that analyze texts published on the internet to respond to user requests in human sounding ways
- Predicts the next word in a sentence that best mimics humanlike conversation
- Reinforcement and self-supervised learning
- Rooted in technological advancements made in the 1950's
- AI: artificial = yes, intelligent = no
- ChatGPT is just one LLM bot developed by the private firm OpenAI

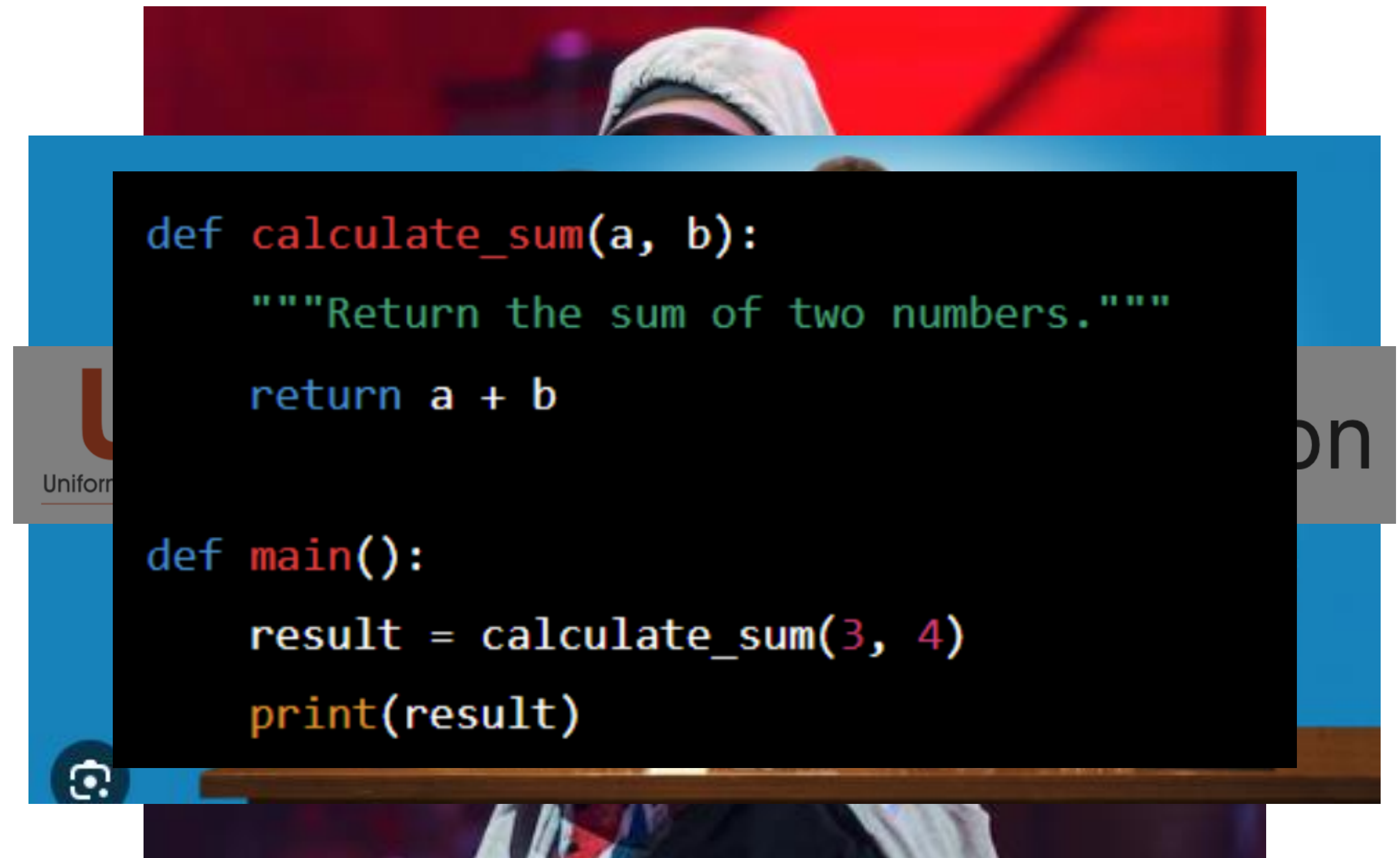
How are others currently using ChatGPT?

- Explosion of new AI and LLM models currently under development
- Images (Midjourney)
- Voices (Microsoft's VALL-E)
- Music (Amber)
- Animation (Vyond)



How are others currently using ChatGPT?

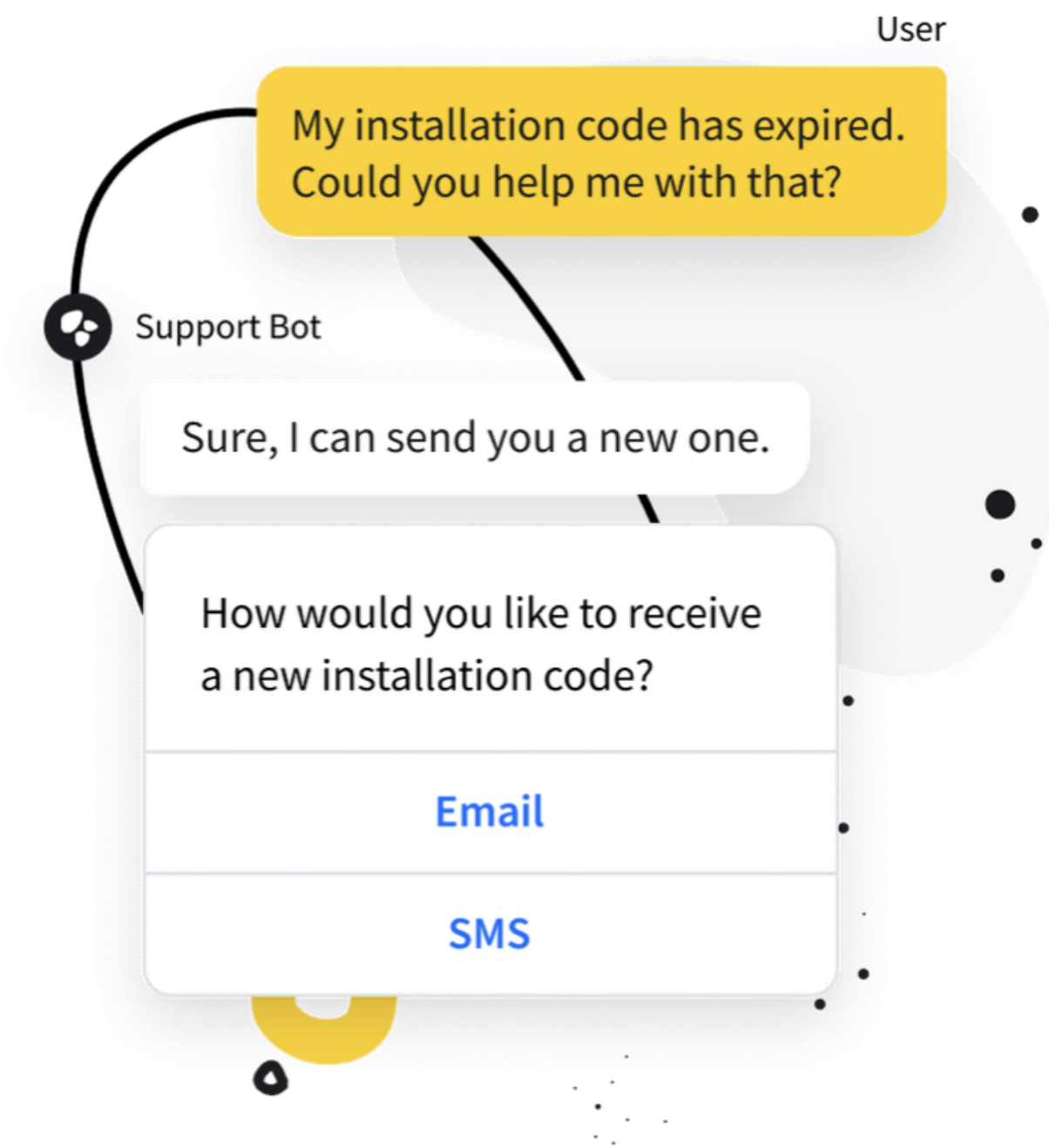
- Song lyrics, TV scenes, and jokes
- Computer code
- Language translation
- Essays and answers to tests

A person wearing a white hoodie is looking at a laptop screen. The screen displays Python code for a function that calculates the sum of two numbers. The code is as follows:

```
def calculate_sum(a, b):  
    """Return the sum of two numbers."""  
    return a + b  
  
def main():  
    result = calculate_sum(3, 4)  
    print(result)
```

How are others currently using ChatGPT?

- Science, medicine, law
- Employment
- Academic writing and exams
- Copy editor
- Search engines
- “Helper bots’ in Word and Excel
- Customer service



What are some of ChatGPT's current limitations?

- Cannot access the internet directly
- Limited to information published to the internet prior to 2021
- Cannot critically evaluate sources of information
- Cannot discern truth or facts

ChatGPT in the News

- Broad misconceptions of the technology and its capabilities
- Displacements, disruptions
- Disinformation
- Deepfakes and spam
- Propaganda
- Harmful content, biases, and stereotypes
- Factuality and truthfulness



ChatGPT in the News

- Ownership, copyrights
- Defamation
- Misuse
- Privacy and security
 - See CU's Office of Information Technology
 - <https://oit.colorado.edu/news/chatgpt-da>

Amazon removes books 'generated by AI' for sale under author's name

Jane Friedman claims she had to fight against Amazon's refusal to remove the misattributed titles because she had not trademarked her name



📷 'They have no procedure for reporting this sort of activity' ... Amazon. Photograph: Pascal Rossignol/Reuters



Issues for Educators to Consider

- Student cheating and plagiarism
- Diane Sieber, Herbst Program for Engineering, Ethics & Society, CU Boulder

Issues for Educators to Consider



From <https://youtu.be/6nkKFmFOoOE?t=1440>

Issues for Educators to Consider

“While the tool may be able to provide quick and easy answers to questions, it does not build critical-thinking and problem-solving skills, which are essential for academic and lifelong success”

- Jenna Lyle, a spokesperson for the New York City Department of Education, in a statement to The Washington Post.
- Can AI-generated content be detected?

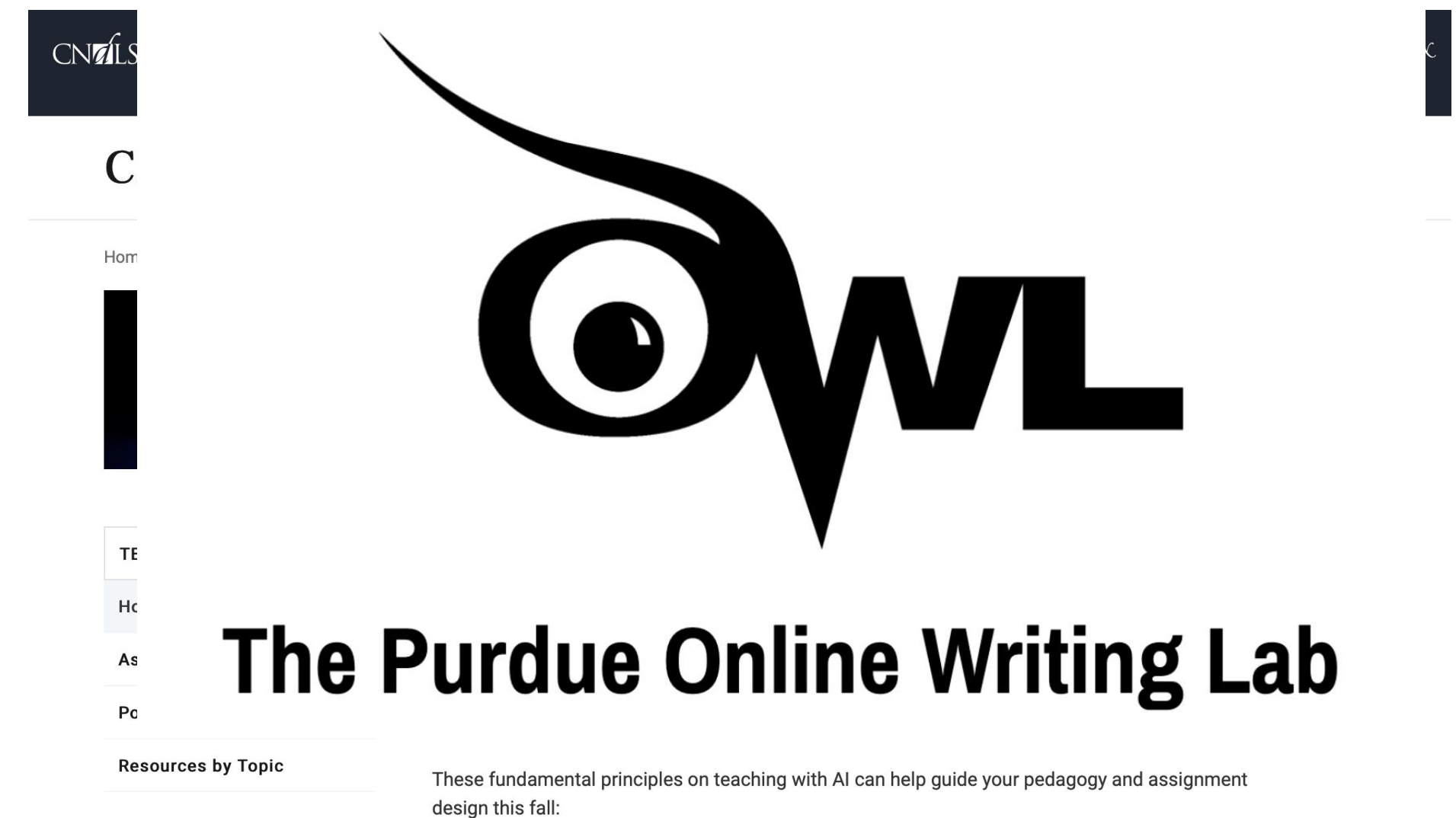
Issues for Educators to Consider

- Enhancing user's education
- Improving student writing
- Tutoring and assisting
- Alternate ways to engage



Issues for Educators to Consider

- Assessing and grading
- Writing course syllabi and designing assignments
- Citing and referencing conventions
- **Access and Equity**



Issues for Researchers to Consider

- Questions about methodology, validity, and reliability
- Incorporating AI-generated content
- Copyright infringement and identifying copyright-protected content
- Ill-equipped for rigorous searching and numerical analyses
- **Bias**

Issues for Researchers to Consider

- Consuming large amounts of information
- Highly sophisticated text tool

Where to find more information

<https://ibs.colorado.edu/large-language-models>



Closing Remarks

- Predictions for the future
- Inevitability of integration and expanded uses
- Continued issues with data integrity, transparency, authenticity, and ownership
- Do LLMs create new knowledge?

Thanks