

Leveraging Azure OpenAI Services for Communication Research

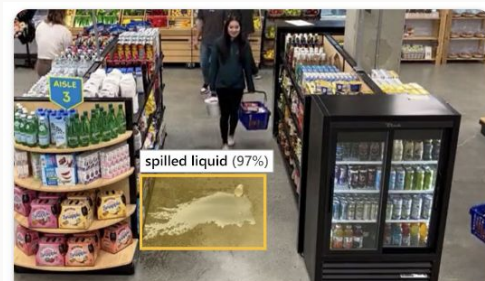
DEPARTMENT OF COMMUNICATION

Project Aim

- Explore Azure Cognitive Services for communication research
- RQ1: What is the benefit of Cloud vs. HPCC / Google Colab
- RQ2: How user-friendly is the system for those without much coding experience?



Try 1: Computer Vision (Spatial Analysis)

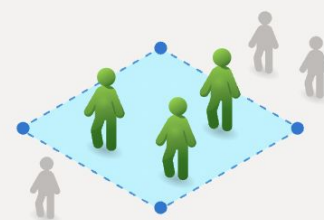


Video summary and frame locator

Preview

Generate a brief summary of the main points shown in video. Locate specific keywords and jump to the relevant section.

[Try it out](#)



Count people in an area

Analyze real-time video to count the number of people in a designated zone in a camera's field of view.

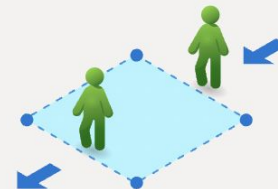
[Learn more](#)



Detect when people cross a line

Analyze real-time streaming video to detect when a person crosses a line in the camera's field of view.

[Learn more](#)



Detect when people enter/exit a zone

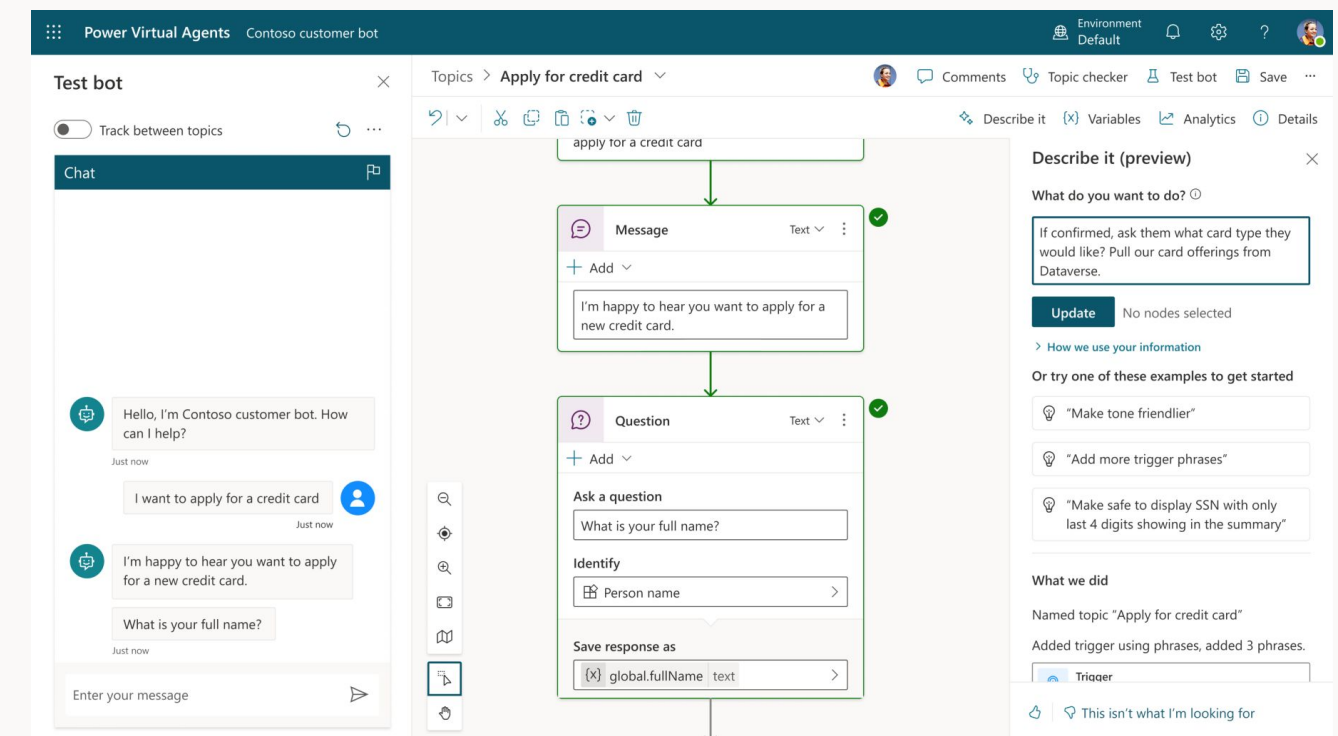
Analyze real-time streaming video to detect when a person enters or exits a zone in the camera's field of view.

[Learn more](#)

- Goal: Explore whether this service can be used to analyze people's use of space?
- Presented proposal to Cloud Fellows
- Result: Service did not seem usable for research due to several privacy and security issues

Try 2: Azure Bot Services

- Goal: Create a bot that answers simple questions about the importance of folic acid for health
- Worked with Pat to deploy service
- Result: Service did not seem easily usable with MSU email account due to IT's regulations and complicated user manual

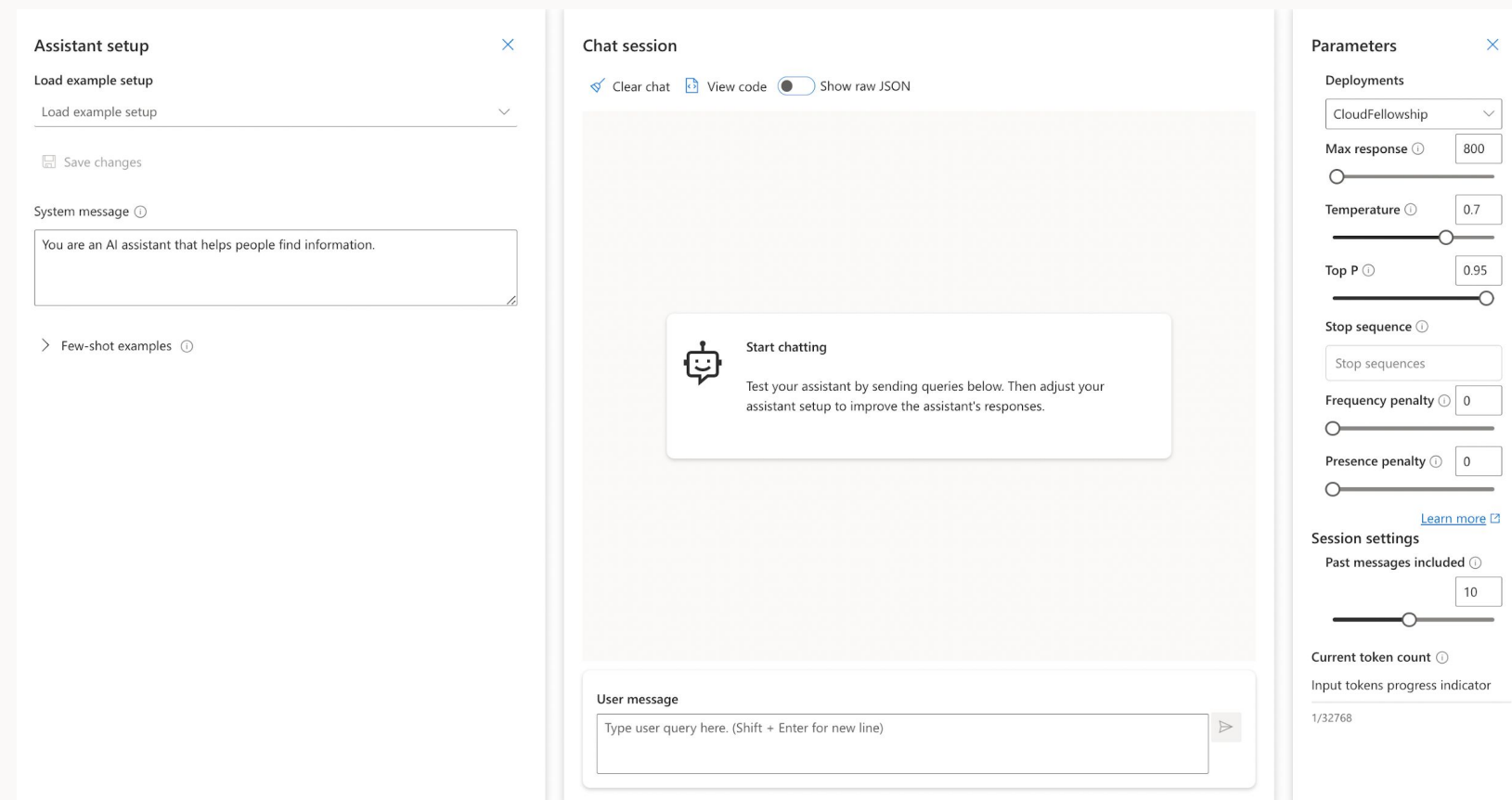


Try 3: Azure OpenAI Services

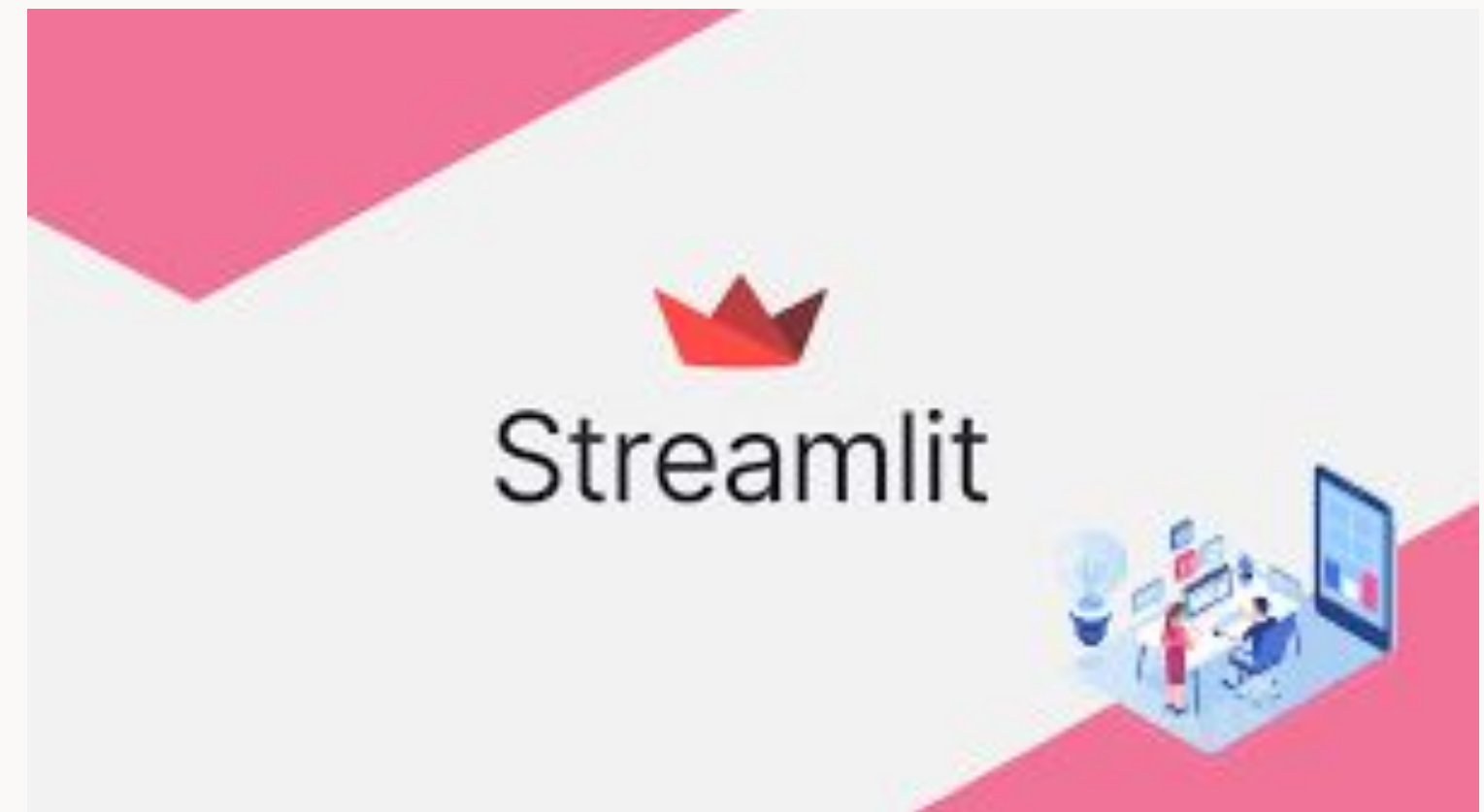
- Goal: Apply for access to OpenAI services and explore the service works
- Applied, gained access to all completion and chat services, including GPT4 32K
- Result: Found service to be VERY user friendly, OpenAI representatives helpful



Project Progress

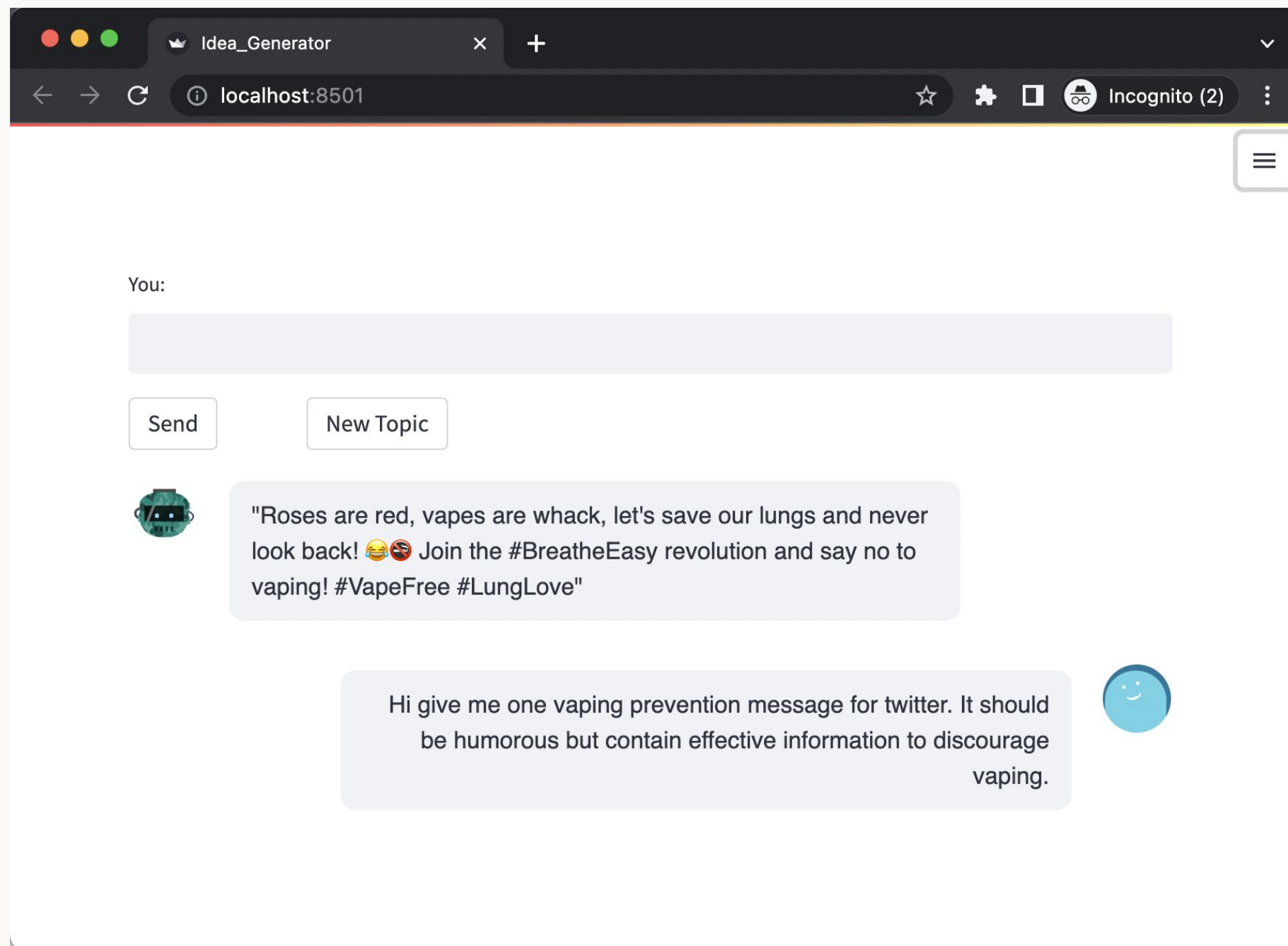


1. Used OpenAI chat playground to explore GPT4-powered chat system



2. Used code from OpenAI chat playground to build Streamlit application for local computer

Project Outcome



- Programmed role of chatbot: "You are a health campaigns expert. Your job is to generate messages and provide ideas to people."
- Cost: Cheap, \$0.12 per 1,000 tokens
- Security: Code private, local computer use only

Lessons Learned

- Security and privacy important - Streamlit for local use only and I will make sure to use it responsibly
- RQ1: Azure OpenAI better compared to OpenAI API – cost per token the same but Azure provides \$200 credit within 30 days (potentially longer for student account)
- RQ2: Azure OpenAI playground user friendly, but launch Streamlit involves little bit of coding knowledge

Future Use



Department

Asked to run workshops on using Azure OpenAI for communication research



Neuroscience of Messages Lab



COMM DEPT MSU

Sue Lim* & Ralf Schmalzle

Department of Communication | Michigan State University

Leveraging Prompt-Engineering to Generate Vaping Prevention Messages: A Role for AI in Health Communication

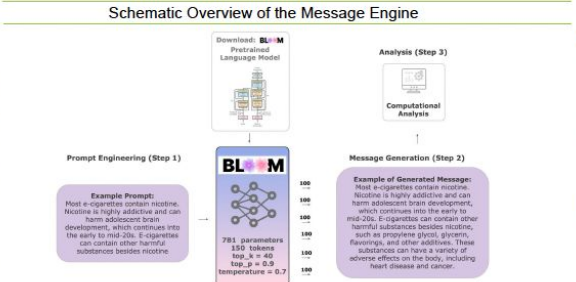
Background

- Vaping has become a significant public health concern in the last decade.
- 15% of young adults and 20% of high school students reported vaping in 2020^{1,2}.
- To combat the detrimental effects of vaping, clear and evidence-based messages that can be mass distributed are required.
- Experts have developed evidence-based messaging strategies for vaping prevention³.
- Problem:** Creating, testing, and distributing high-quality messages requires much time, labor and finances.
- Solution:** Leverage AI message engine to generate prevention messages aligned with strategies suggested by experts.

Method

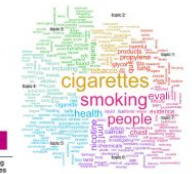
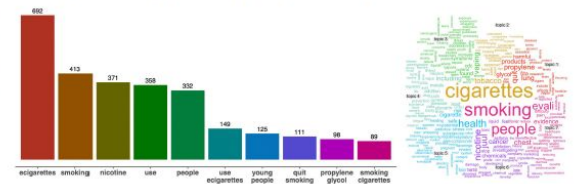
- Powered by Bloom:** 7 billion hyper-parameter versions trained on 1.5 TB of text from 45 natural languages⁴.
- Prompt-engineering:** Input beginning part of text to message engine so the message engine can complete the text.
- Prompts created from information on Centers for Disease Control and Prevention (CDC)⁵, Surgeon General⁶, and other expert web pages.
- Generate 10 messages using each prompt and evaluate the messages.
- Discarded prompts based on a set exclusion criteria (e.g., too many names of official organizations).
- Total of 6 prompts selected.
- Message generation:** 100 messages generated for each prompt.
- Computational Evaluation:** N-gram, topic modeling, readability⁷, sentiment⁸.

Schematic Overview of the Message Engine



Results

- Readability:** Messages easy to read (M_{Flesch-K} = 67.67; SD = 14.10)
- Sentiment:** Tendency toward negative affective polarity (M_{Lester Compounding} = -.31; SD = .53)
- N-gram & topic modeling:** Messages addressed specific negative health consequences of vaping and the effects of specific chemicals contained in cigarettes.
- This aligns with the suggested best practices by health experts.



Discussion

Main findings

- Through rigorous prompt-engineering process, the Bloom vaping message engine was able to generate hundreds of messages within a few hours.
- Messages were easy to understand.
- Messages' content was consistent with evidence-based messaging strategies suggested by experts.

Implications

- Practical:** Alleviate the burden of cost, labor, and time for health professionals.
- Theoretical:** Expand understanding of the mechanisms of generating effective, theory-based prevention messages.

References

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We thank HuggingFace for making the Bloom Language Model available!

Sue's Research

Will develop Streamlit to conduct research responsibly



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THANK YOU!