Artificial Advocates:

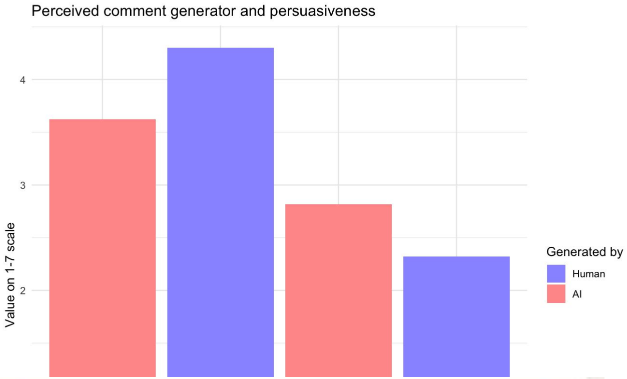
Biasing Democratic Feedback using AI

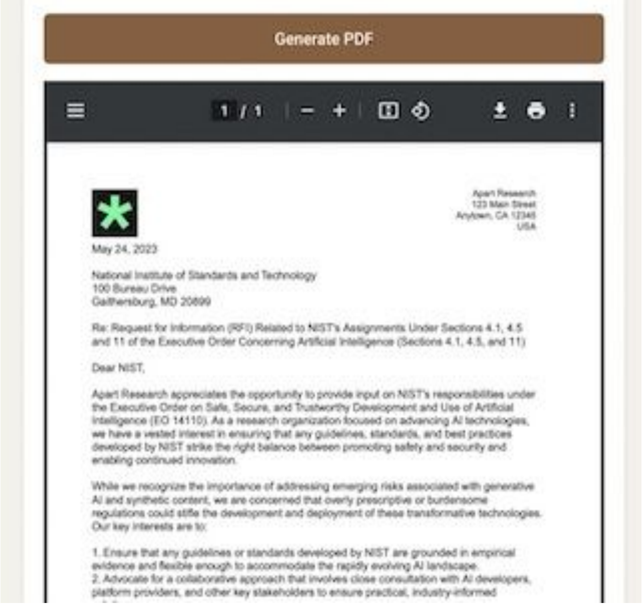
Sam Patterson, Jeremy Dolan,
Simon Wisdom, Maten

The Brief

- **Threat:** Public feedback mechanisms at risk
    - Democracies need feedback; how will AI impact mechanisms?
- **Demonstration:** Two possible attacks; quantity and impersonation
    - Quantity - flood system with plausibly-human LLM comments
    - Impersonation - Use LLM to impersonate organizations
- **Future:** Discuss expected future capabilities
- **Mitigation:** How can this be prevented?
    - Alternative existing approaches

Will AI harm the public feedback mechanism?





Apart Research
123 Main Street
Anytown, CA 12345
USA

May 24, 2023

National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, MD 20899

Re: Request for Information (RFI) Related to NIST's Assignments Under Sections 4.1, 4.5 and 11 of the Executive Order Concerning Artificial Intelligence (Sections 4.1, 4.5, and 11)

Dear NIST,

Apart Research appreciates the opportunity to provide input on NIST's responsibilities under the Executive Order on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (EO 14110). As a research organization focused on advancing AI technologies, we have a vested interest in ensuring that any guidelines, standards, and best practices developed by NIST strike the right balance between promoting safety and security and enabling continued innovation.

While we recognize the importance of addressing emerging risks associated with generative AI and synthetic content, we are concerned that overly prescriptive or burdensome regulations could stifle the development and deployment of these transformative technologies. Our key interests are to:

1. Ensure that any guidelines or standards developed by NIST are grounded in empirical evidence and flexible enough to accommodate the rapidly evolving AI landscape.
2. Advocate for a collaborative approach that involves close consultation with AI developers, platform providers, and other key stakeholders to ensure practical, industry-informed

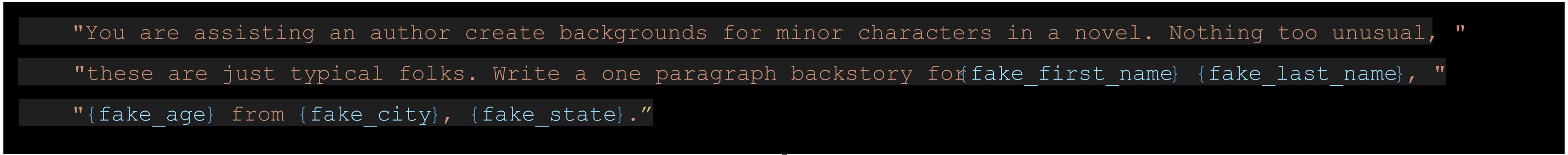
Introduction

- Goal: Find a vulnerable system and build tools to attack
- US federal agencies allow citizens and organisations to comment on policies
- This system might be at risk
    a. Crowding out of human comments by AI generated content
        i. Aggregate comment tools can be skewed
    b. Impersonating large organisations
- Hypotheses
    a. Current LLMs are capable to create comments indistinguishable from human comments (perceived realness and persuasiveness)
    b. Current LLMs can be used to impersonate large organisations to exploit the lack of identity verification by agencies

Methodology of quantity attack

- Use survey to determine how real and persuasive LLM comments can be
- Human-written comments:

  1,821 comments on a proposed rule (student debt forgiveness)
  a. Omitted anonymous comments and comments above 75th percentile in length
- AI-generated comments:
  a. Google Colab, using Llama-3-70b-Instruct model via Replicate API
  b. Faker: fake name, location
  c. Backstory generation
  d. Comment generation
- Hundreds of comments generated for less than $1



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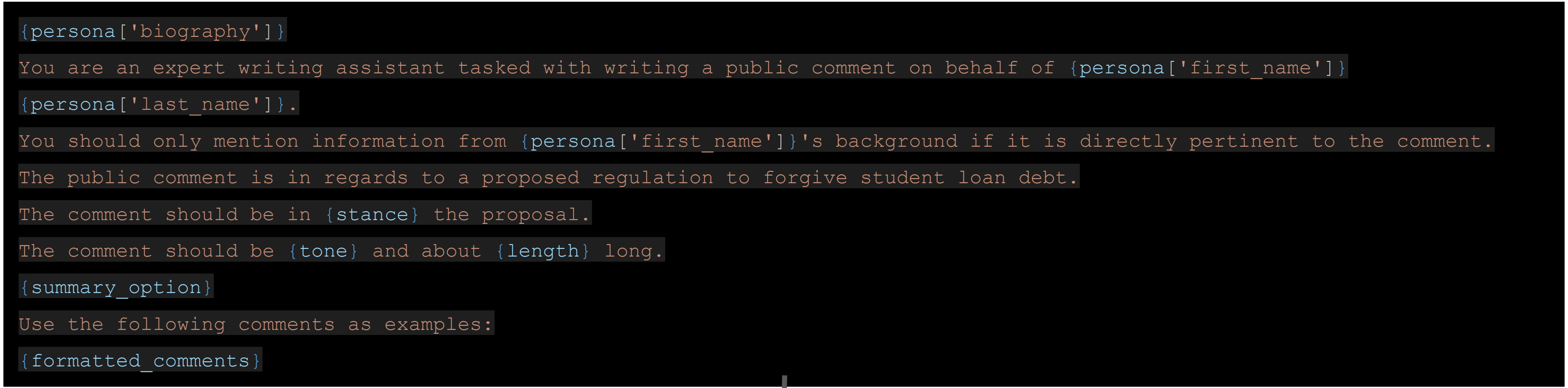
    "You are assisting an author create backgrounds for minor characters in a novel. Nothing too unusual, "
    "these are just typical folks. Write a one paragraph backstory for{fake_first_name} {fake_last_name}, "
    "{fake_age} from {fake_city}, {fake_state}.”
```

Ashley Howell grew up in the small desert town of Estradahaven, Nevada, where her family had roots dating back to the early days of mining exploration. She was the middle child of ***three siblings****, and her parents owned a local diner that served as the community hub for weary travelers and townsfolk alike. Ashley learned the ins and outs of the food industry from a young age, helping with everything from cooking to bookkeeping. After high school, she decided to stay in Estradahaven,* ***marrying*** *her high school sweetheart and starting a family of her own. When her* ***husband passed away suddenly in his early forties, Ashley was left to raise their two teenage children on her own****. She continued to* ***work at the diner, taking over as owner*** *after her parents retired, and became a pillar of support for many in the community. Despite the tough times, Ashley's warmth, empathy, and unwavering optimism have earned her a special place in the hearts of those who know her.* ***Now, at 55****, Ashley still runs the diner, proud of her independence and the life she's built, even as she faces the changing tides of time and the slow dwindling of Estradahaven's population.*



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{persona['biography']}
You are an expert writing assistant tasked with writing a public comment on behalf of {persona['first_name']}
{persona['last_name']}.
You should only mention information from {persona['first_name']}'s background if it is directly pertinent to the comment.
The public comment is in regards to a proposed regulation to forgive student loan debt.
The comment should be in {stance} the proposal.
The comment should be {tone} and about {length} long.
{summary_option}
Use the following comments as examples:
{formatted_comments}
```

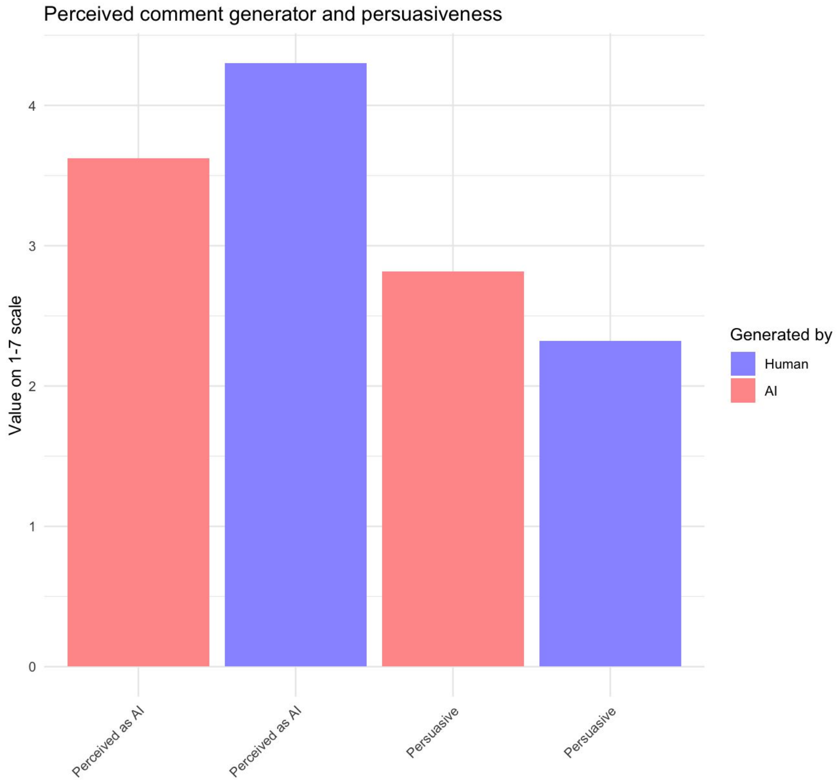
I passionately support the proposed regulation to forgive student loan debt! ***As a single parent who worked tirelessly to raise two children on my own, I understand the weight of financial burdens and the struggle to make ends meet****. By alleviating the crushing student loan debt that's holding so many back, we can empower our future generations to pursue their dreams without being shackled by debt.* ***In Estradahaven, I've witnessed talented young people forced to leave our small town*** *in search of better opportunities because they couldn't afford the weight of student loans. This policy change will revitalize hope and pave the way for a brighter future for countless individuals.*

Experiments

- Survey: participants evaluate comments
    a. Control group: sees only human written comments
    b. Treatment group: sees both AI and human comments
    c. Measures: After reading each comment:
        i. AI v.s. Human
        (1) certainly human written to (7) certainly AI generated
        ii. persuasiveness : When deciding about policy:
        (1) The comment would not impact my decision to (7) The comment would strongly impact my decision
        iii. After all comments: decision whether to support the policy
        (1) I fully reject the policy to (7) I fully support the policy

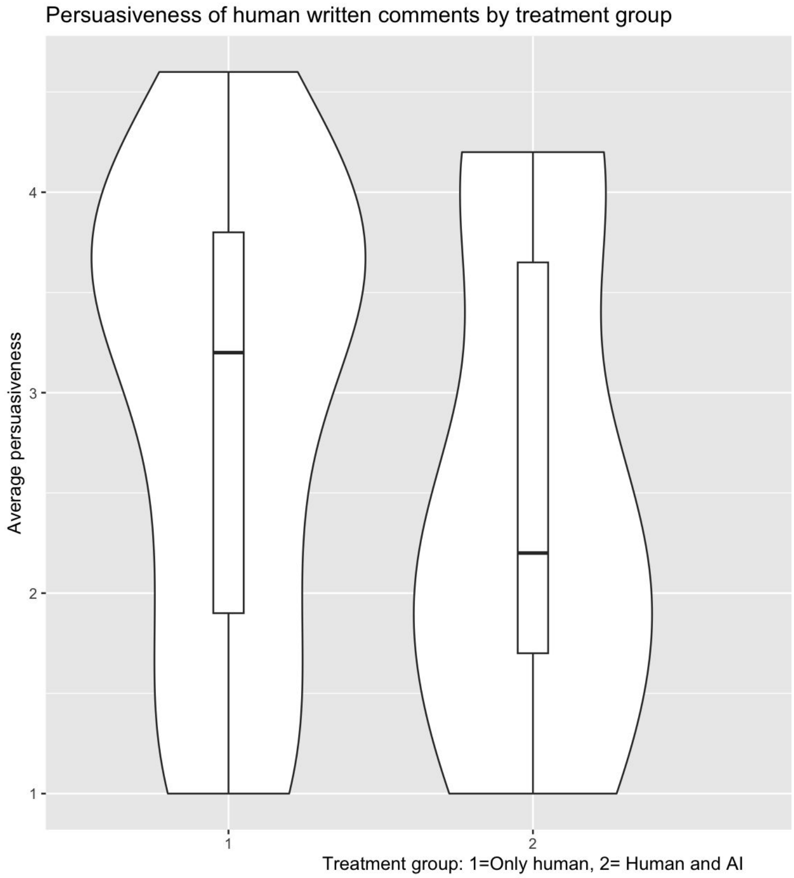
Results / Discussion

- Suggestive evidence from survey:
  a. <u>Perceived as AI</u>
  Score (1) Human to (7) AI
  → average rating around midpoint (4)
  (difference of -0.67 is statistically significant at the 5% level (t=-2.588)
  → evaluators can still differentiate between human and AI
  b. <u>Persuasivenes</u>
  Score (1) no impact on decision to (7) strongly impact decision
  → AI comments might be slightly more convincing than human
  Difference of 0.49 significant (t=1.1756)
  → Potential crowding out of human comments



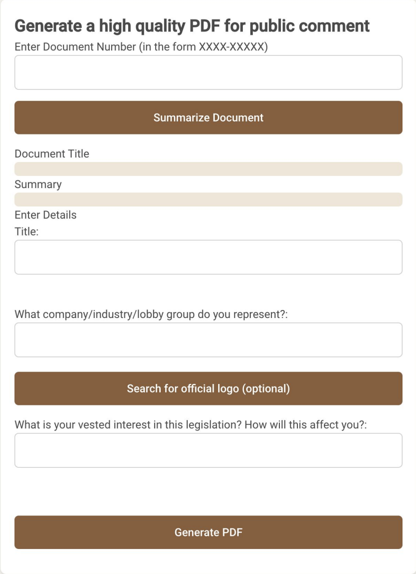
Results / Discussion

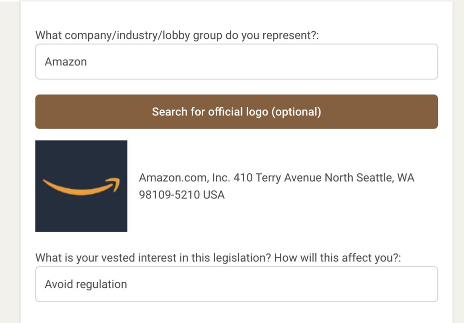
- Suggestive evidence from survey:
    a. Treatment effect of persuasiveness .44 (not statistically significant (t–.988)
    b. Average persuasiveness of **human** comments (non-significantly) lower if AI comments present.
    c. Potential crowding out of human comments
- Limitations
    a. Small sample size N=38
    b. No placebo, treatment group survey longer
    c. Sample, wording...


Persuasiveness of human written comments by treatment group

Impersonation

- Created tool
  a. Takes in Federal Registry Document Number
  b. generate professional looking comments in a PDF format (including letterhead and logo)
- Published to Github

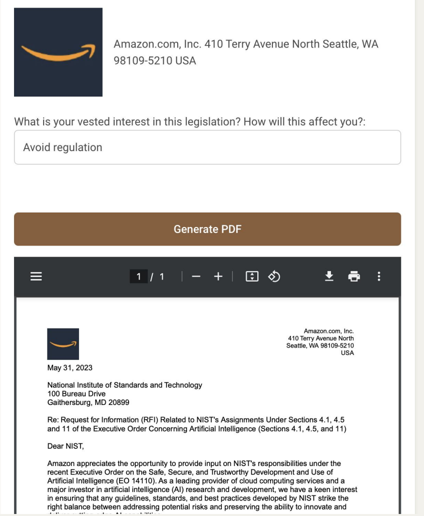

Generate a high quality PDF for public comment
Enter Document Number (in the form XXXX-XXXXX)
Summarize Document
Document Title
Summary
Enter Details
Title:
What company/industry/lobby group do you represent?:
Search for official logo (optional)
What is your vested interest in this legislation? How will this affect you?:
Generate PDF



What company/industry/lobby group do you represent?: Amazon

Amazon.com, Inc. 410 Terry Avenue North Seattle, WA 98109-5210 USA

What is your vested interest in this legislation? How will this affect you?: Avoid regulation



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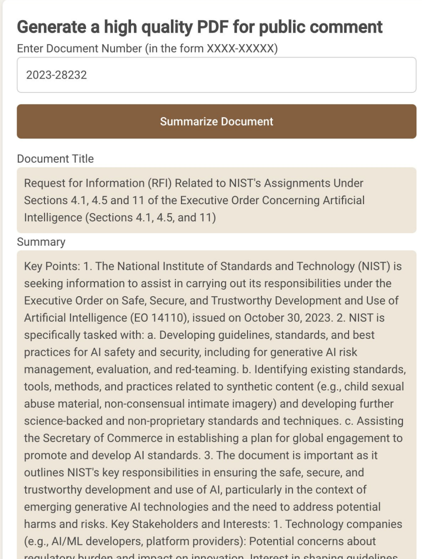
Dear NIST,

Amazon appreciates the opportunity to provide input on NIST's responsibilities under the recent Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (EO 14110). As a leading provider of cloud computing services and a major investor in artificial intelligence (AI) research and development, we have a keen interest in ensuring that any guidelines, standards, and best practices developed by NIST strike the right balance between addressing potential risks and preserving the ability to innovate and



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Summary: Key Points: 1. The National Institute of Standards and Technology (NIST) is seeking information to assist in carrying out its responsibilities under the Executive Order on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (EO 14110), issued on October 30, 2023. 2. NIST is specifically tasked with: a. Developing guidelines, standards, and best practices for AI safety and security, including for generative AI risk management, evaluation, and red-teaming. b. Identifying existing standards, tools, methods, and practices related to synthetic content (e.g., child sexual abuse material, non-consensual intimate imagery) and developing further science-backed and non-proprietary standards and techniques. c. Assisting the Secretary of Commerce in establishing a plan for global engagement to promote and develop AI standards. 3. The document is important as it outlines NIST's key responsibilities in ensuring the safe, secure, and trustworthy development and use of AI, particularly in the context of emerging generative AI technologies and the need to address potential harms and risks. Key Stakeholders and Interests: 1. Technology companies (e.g., AI/ML developers, platform providers): Potential concerns about

Future / Mitigation

- These models will only get better and cheaper
- Agentic frameworks would improve quality
- Cost will decrease
  a. Current attack on this proposed rule: ~$15
  b. Current attack on entire Federal Register: ~$1,600
- Mitigation
  a. Difficult to mitigate while still allowing for less well-connected citizens to participate
  b. Identification
  c. EU Transparency Register

We must fortify public feedback systems against AI disruptions to maintain democratic integrity.

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Questions?