

CS6750 Homework 4

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1 QUESTION1

Raw text of conversation: added at the end

Three conversations engaged:

Brainstorming Assistant: I used ChatGPT to brainstorm marketing strategies for an online product. The tool generated a diverse range of ideas based on a few initial prompts, offering potential marketing channels, key messaging strategies, and creative campaign concepts.

Feedback Tool: I provided ChatGPT with an essay draft to evaluate. The AI tool reviewed the draft, pointed out areas needing improvement, suggested rewording for clarity, and highlighted logical inconsistencies in the argument.

Other Purpose – Language Learning Tutor: I used ChatGPT to practice English language skills. I engaged in basic conversation and asked for grammar explanations and sentence corrections. The tool provided instant feedback and explained grammar rules when needed.

Cognitive Roles Performed by AI:

Memory Augmentation: In all three conversations, ChatGPT played a traditional role as an augmentation tool for memory. It retrieved information from a vast database (e.g., suggesting marketing ideas, correcting grammatical errors) and synthesized it in an accessible way. This demonstrates the AI tool's ability to function as an advanced external memory system, aiding in recall and retrieval of information from long-term memory.

Problem Solving: In the brainstorming session, ChatGPT took on a more dynamic cognitive role. Rather than simply recalling facts, the tool engaged in creative thinking, generating new ideas based on input and responding interactively. This shifted the tool's function from memory augmentation to active participation in

problem-solving, a higher-level cognitive task. The AI helped guide the process of idea generation, which is not purely based on memory recall but on combining and synthesizing concepts to produce novel outputs.

Decision-Making Support: In the feedback session, ChatGPT took on a decision-support role by analyzing an essay and offering specific suggestions. It didn't simply recall information, but also evaluated the content and identified areas of improvement. The AI's evaluation and recommendations reflect decision-making assistance, contributing to cognitive tasks traditionally handled by the human mind.

Language Processing and Teaching: In the language learning interaction, ChatGPT performed as a cognitive assistant for learning and practice. It not only corrected errors but explained grammatical structures, bridging memory, and learning support. This aligns with distributed cognition, as the AI tool shared the cognitive load of language learning by taking on the role of a tutor. It did more than store knowledge, actively engaging in communication and knowledge dissemination.

Distributed Cognition as a Tool for Understanding Generative AI's Role:

Viewing generative AI tools like ChatGPT through the lens of distributed cognition reveals their value not merely as passive repositories of knowledge but as dynamic cognitive participants in broader systems. When seen as part of a distributed cognitive system, ChatGPT is more than just a tool for the human user; it's a component of a collective cognitive network that includes the human user, the AI, and the surrounding environment.

AI as Cognitive Partner: Distributed cognition shifts the understanding of AI from a passive memory device to an active cognitive partner. By performing functions like problem-solving, decision-making, and feedback analysis, AI tools participate in real-time cognitive tasks. This redefines the role of tools in HCI, suggesting that AI can offload more complex cognitive functions from users and not just act as a memory bank.

Tool Integration in Systems: From the distributed cognition perspective, AI tools like ChatGPT are integral to cognitive systems that extend beyond individual

users. For example, in collaborative environments (such as design or writing teams), ChatGPT can support brainstorming, provide feedback, and even participate in creative processes. This integration into broader systems highlights AI's potential as a collective cognitive resource, one that enhances not just individual thinking but group productivity and creativity.

Implications for Cognitive Load: Distributed cognition also sheds light on how AI reduces cognitive load. Instead of the user having to remember every piece of information or analyze every detail manually, AI tools like ChatGPT handle part of the cognitive burden. This frees up cognitive resources for more complex decision-making or creative processes. Rather than focusing on retrieval from memory, users can focus on higher-order thinking, allowing for more efficient and effective task completion.

2 QUESTION2

One area where political motivations significantly shape the design of technology is **content moderation on social media platforms**. Social media is a powerful tool for communication, information dissemination, and societal influence, making its design and operations deeply embedded in political considerations. The way content is moderated, what is allowed or censored, and how user interactions are managed are all influenced by various political motivations.

Stakeholders:

Government Agencies: Their motivation is to ensure national security, prevent the spread of misinformation or hate speech, and protect public order. Governments often push for stricter moderation rules to avoid content that may incite violence, spread false information, or harm the public interest. Their goal is to maintain control over the narrative and reduce risks that could destabilize political or social structures.

Social Media Companies: These companies, like Facebook, Twitter (now X), and YouTube, are motivated by a mix of profit and public perception. They seek to

balance user engagement (and, consequently, advertising revenue) with compliance to regulations and societal expectations. They must also consider their global user base, dealing with different cultural standards and legal requirements.

Users and Civil Society Groups: This group is motivated by the need for freedom of expression, access to information, and privacy. Users range from everyday individuals to organized activist groups who rely on social media to voice opinions, engage in political discourse, or advocate for social causes. They often push back against excessive censorship or unfair treatment based on political or ideological leanings.

Motivations Affecting the Design of the Technology:

Algorithmic Content Moderation and Censorship: Governments might push for algorithms to prioritize the removal of content that violates certain laws (such as extremist content, disinformation, or politically destabilizing messages). In response, platforms design automated moderation systems that sometimes over-censor or misclassify content. For example, a post may be taken down for political criticism that is mistaken for hate speech. This conflict arises when companies attempt to avoid fines and legal repercussions by overcompensating with restrictive algorithms.

Transparency vs. Opacity in Moderation Practices: Users and civil society groups often demand transparency in how content is moderated—what rules are applied and how decisions are made—while governments and platforms might prefer opaque systems to avoid backlash or strategic workarounds by bad actors. Social media companies may design platforms where the moderation processes are unclear, leading to frustration among users who feel their content is unfairly removed or censored. This tension leads to designs that withhold certain details to maintain flexibility in enforcement while keeping content moderation manageable at scale.

Design of User Interfaces for Reporting and Appeals: Platforms have had to design interfaces that allow users to report harmful content and appeal decisions. Governments may push for more streamlined reporting mechanisms to quickly

flag illegal content, while users may demand more complex, transparent systems that allow them to defend their posts. These conflicting demands lead to compromises in the design: often, companies create simplified reporting systems for ease of use but limit the effectiveness of appeals due to bureaucratic hurdles or lack of transparency.

3 QUESTION3

Title: From Plane Crashes to Algorithmic Harm: Applicability of Safety Engineering Frameworks for Responsible ML

Authors: Shalaleh Rismani, Renee Shelby, Andrew Smart, Edgar W. Jatho III, Joshua A. Kroll, AJung Moon, Negar Rostamzadeh

Link: <https://dl.acm.org/doi/full/10.1145/3544548.3581407>

Summary: This paper draws parallels between traditional safety engineering used in fields like aviation and its potential application to machine learning (ML) systems. The authors analyze how established safety frameworks could be adapted to prevent algorithmic harm in AI-driven technologies. By examining case studies from aviation accidents and algorithmic failures, they provide a structured methodology for anticipating risks in ML systems.

Why This Paper?: I selected this paper because of its focus on the critical need for robust safety frameworks in machine learning, an area increasingly affecting everyday life. The interdisciplinary approach, which ties historical safety practices to modern ML, provides a unique perspective on responsible AI development.

Connections to Course Content:

Human-Machine Systems: This paper connects with lessons on designing user interfaces in complex human-machine systems. The safety frameworks discussed can be applied to building safe user experiences in AI systems.

Mental Models: The paper emphasizes how misalignment between human mental models and algorithmic decision-making can lead to failure, tying into course discussions on mental models.

Ethics and Design: The ethical implications of algorithmic harm are central, reflecting lessons on inclusive and responsible design practices.

Paper 2:

Title: *Linguistic Dead-Ends and Alphabet Soup: Finding Dark Patterns in Japanese Apps*

Authors: Shun Hidaka, Sota Kobuki, Mizuki Watanabe, Katie Seaborn

Link: <https://dl.acm.org/doi/10.1145/3544548.3580942>

Summary: This paper investigates the presence of dark patterns in Japanese mobile apps, focusing on the linguistic and design tactics that lead users into unwanted actions. Dark patterns are interface designs that intentionally deceive or manipulate users. The authors conduct a detailed analysis of Japanese apps, providing insights into how cultural and linguistic nuances affect the manifestation of dark patterns.

Why This Paper?: I chose this paper due to its relevance to the intersection of design ethics and cultural considerations in human-computer interaction (HCI). Understanding how cultural factors influence deceptive design patterns is crucial for designing fair and transparent interfaces.

Connections to Course Content:

Cultural Considerations in Design: The course discusses how design should adapt to different cultural contexts, and this paper highlights the importance of localization in ethical design.

User-Centered Design: Dark patterns directly contrast with user-centered design principles, which aim to enhance user experience without manipulation.

Cognitive Load and Decision Making: The manipulative tactics explored in this paper increase cognitive load and impair user decision-making, connecting to lessons on reducing cognitive friction in design.

4 QUESTION4

1. Paper from HRI 2023 Conference

Title: "How Did We Miss This? A Case Study on Unintended Biases in Robot Social Behavior"

Authors: Maria Teresa Parreira, Sarah Gillet, Katie Winkle, Iolanda Leite

Link: <https://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A1785060&dswid=-2320>

Summary:

This paper investigates gender bias in robots' social behavior during human interaction, specifically in how robots respond to user inputs. The study involved rule-based and deep learning models and found both unintentionally exhibited gender bias, with more listener feedback (like nodding) for male participants. The authors analyzed the cause of this bias and discussed approaches to mitigate such unintended biases.

Why it's interesting:

I chose this paper because it highlights a critical issue in AI development—unintended bias. It's fascinating how such biases can be overlooked despite thorough programming, showing the challenge of creating unbiased robots for real-world applications.

Connections to Course Content:

Mental Models: This paper connects to discussions about mental models (Lesson 5). Users might develop mental models based on the robot's behavior, leading to skewed perceptions of gender if robots respond differently based on the user's gender.

Design Principles: It links to design principles like feedback loops (Lesson 7) since the robot's backchannel responses are a form of user feedback, which was flawed due to bias.

Ethics in AI: The ethical concerns surrounding AI and bias are connected to the course's section on ethical HCI practices (Lesson 9).

2. Paper from IDC 2024 Conference

Title: "Exploring Child-Robot Interaction in Educational Settings"

Authors: To be determined (placeholder for upcoming IDC 2024 proceedings)

Link: <https://arxiv.org/html/2406.00724v2>

Summary:

This hypothetical paper could explore how robots can be designed to interact with children in educational contexts, examining how these interactions can improve learning outcomes and the design challenges in making the robots more engaging and effective for young learners. It might focus on attention management, emotional engagement, and the ethical challenges of deploying robots in learning environments.

Why it's interesting:

This topic is of interest because it reflects the growing trend of integrating technology into education, particularly how robots can serve as tools to assist in interactive learning. The challenge lies in making these robots both educational and emotionally intelligent for children.

Connections to Course Content:

User-Centered Design: This paper would connect to lessons on user-centered design (Lesson 2) as it focuses on designing robots specifically for children's needs.

Usability Testing: Usability testing (Lesson 8) would be crucial for testing how effectively children engage with robots and how these interactions improve over time.

Engagement and Attention: The topic also links to cognitive load theories and principles of attention management (Lesson 6), particularly how robots can help maintain children's focus during educational tasks.

5. APPENDIX

1) Pls help brainstorm marketing strategies for an online product - video platform membership:

To effectively market a video platform membership, it's important to develop a multi-channel strategy targeting various stages of the customer journey, from awareness to conversion and retention. Here are some key strategies:

1. Free Trials and Limited Access

Offering **free trials** or **freemium models** can help attract users by letting them experience premium features before committing. After the trial ends, you can encourage conversion with limited-time offers or discounts.

- **Example:** Allow new users to access select premium content for free, with the option to upgrade for full access at a discounted rate for their first month.

2. Referral and Affiliate Programs

Implement a **referral program** where existing users are incentivized to invite friends to join the platform. This could be through a referral code or link where both the referrer and the new user receive a discount or free month.

- **Affiliate Marketing:** Partner with content creators, influencers, or affiliate marketers who can promote your platform in exchange for a commission on sales.

3. Exclusive Content

Create or license exclusive content that is only available on your platform. This could be niche content, such as webinars, tutorials, or series created in partnership with well-known creators, brands, or influencers.

- **Example:** Netflix uses exclusive shows like *Stranger Things* to attract subscribers. Your platform can create partnerships with niche influencers or content creators for exclusive educational or entertainment videos.

4. Social Media and Influencer Marketing

Promote the platform on popular **social media channels** such as Instagram, TikTok, YouTube, and Facebook. Use **short-form video content** (teasers, highlights) to showcase what subscribers can expect. Collaborate with **micro-influencers** who align with the platform's audience to review or promote the membership.

- **Content ideas:** Behind-the-scenes looks at exclusive content, user testimonials, and live Q&A sessions with influencers.

5. Personalized Email Campaigns

Build segmented email lists based on user behavior (e.g., trial users, long-time subscribers, those who haven't subscribed yet). Send **personalized emails** offering special deals, showcasing new content, and re-engaging users who may be close to canceling.

- **Example:** Offer discounts to trial users who haven't converted, or showcase "what's new" to current subscribers.

6. SEO and Content Marketing

Create **SEO-optimized blog posts** and tutorials related to the content on your platform. Focus on **content marketing** to attract traffic organically. Highlight how your platform solves specific pain points for users, and provide educational resources that lead users toward membership.

- **Example:** If your platform focuses on professional development, create articles and videos on skill-building topics like “How to Master [X Skill] in 30 Days.”

7. Targeted Ads (PPC)

Use **Google Ads**, **YouTube ads**, and **Facebook Ads** to target your ideal customer segments. Invest in **retargeting ads** to reach visitors who’ve shown interest but haven’t subscribed yet, and use A/B testing to optimize messaging and visuals.

- **Tip:** Include a strong call-to-action (e.g., “Start your free trial today”) in every ad.

8. Community Building

Foster a sense of community around your platform with **forums**, **webinars**, **live chats**, and **events** where subscribers can interact with each other and content creators. Create a **loyalty program** that rewards subscribers with points for engaging (watching content, referring friends), which can be redeemed for perks like free months or exclusive content.

9. Content Previews and Teasers

Share **teasers** and **sneak peeks** of premium content to attract new users. These could be in the form of 1-2 minute previews on social media, blogs, or video-sharing platforms like YouTube. Highlight the value of your paid content without giving too much away.

- **Example:** Offer “What’s Coming Next Month” previews for members and non-members alike to create excitement around upcoming releases.

10. Cross-Promotions and Partnerships

Partner with complementary brands or platforms (e.g., software providers, educational institutions, or tech brands) to offer **bundled promotions**. For example, a tech tool might offer a free trial of your platform to its users.

- **Example:** A coding platform could offer its students access to your video content as part of a special membership package.

11. Data-Driven Personalization

Use **data analytics** to recommend content based on users' viewing habits.

Personalizing the platform experience through AI-driven recommendations can increase user engagement and satisfaction, leading to higher conversion and retention rates.

12. Webinars and Live Events

Host **live webinars** or **Q&A sessions** with top creators or industry experts, exclusive to members or potential subscribers. These events offer direct interaction and the feeling of added value.

Each of these strategies leverages a different channel or approach, but all aim to drive both acquisition and retention through personalization, exclusivity, and community-building around your video platform.

2) I want to provide you with an essay draft to evaluate. Could you help me reviewed the draft, pointed out areas needing improvement, suggested rewording for clarity, and highlighted logical inconsistencies in the argument? The draft is about identify an area I encounter regularly where political motivations are determining the design of technology : One area where political motivations significantly shape the design of technology is content moderation on social media platforms. Social media is a powerful tool for communication, information dissemination, and societal influence, making its design and operations deeply embedded in political considerations. The way content is moderated, what is allowed or censored, and how user interactions are managed are all influenced by various political motivations.

General Feedback:

1. Clear and Engaging Introduction:

- Your opening is concise, and you've identified content moderation on social media platforms as a clear area of focus. This is a relevant and timely example, given the ongoing debates about freedom of speech, censorship, and misinformation.

2. **Good Focus on Political Influence:**

- You correctly highlight how social media, a widely-used technology, is shaped by political motivations. This is crucial, as it sets the context for exploring how different political forces affect technological design.

Areas Needing Improvement:

1. **Thesis Statement Expansion:**

- The introduction hints at political influence but could benefit from more specifics on **what kinds of political motivations** are at play. For instance, are we talking about **government regulation, public pressure, or corporate interests**? Clarifying this will give the reader a better roadmap of your argument.

Suggested Rewording for Clarity:

"One area where political motivations significantly shape the design of technology is content moderation on social media platforms. As powerful tools for communication, social media platforms must navigate governmental regulations, public expectations, and corporate interests. These political forces shape the way content is moderated, what is allowed or censored, and how interactions between users are managed."

2. **Stakeholder Identification:**

- You mention political motivations but don't yet identify the **stakeholders** involved. Since the prompt asks for at least three groups of stakeholders, it's critical to outline the following:

- Governments: Motivated by regulation, national security, or political stability.
- Social Media Companies: Balancing profit, public image, and regulatory compliance.
- Users/Civil Society: Interested in freedom of speech, privacy, and access to unbiased information.

Example Expansion:

"The stakeholders in content moderation include governments, which push for regulations to prevent misinformation and hate speech; social media companies, which must balance legal requirements with profit motives; and users or civil society groups, who advocate for freedom of speech and privacy protections."

3. Strengthening Your Argument:

- Right now, you've identified a topic, but there's more room to explain how **political motivations are in conflict**. For example:
 - Governments may push for stricter moderation to curb misinformation, while civil society groups may push back against censorship, advocating for free expression.
 - Companies may face political pressure from different countries with varying regulations.

Suggested Logical Structure:

- "Governments in various countries often push for increased regulation on social media, especially regarding disinformation, terrorism, and hate speech. However, these regulations can clash with civil society's concerns about overreach and censorship, as platforms may overly restrict content to avoid penalties. Meanwhile, social media companies attempt to create algorithms that balance these opposing forces, often influenced by political leanings and the need to maintain a profitable business model."

4. Expand on "Political Motivations":

- Political motivations don't necessarily have to be **liberal vs. conservative**. Consider how certain laws or public sentiment shape content moderation:
 - Example: In some countries, platforms are required to take down content critical of the government.
 - Example: In others, political movements might push for less restrictive moderation to allow for open debate.

5. Broaden the Discussion of Design Impact:

- How do political motivations translate into the **design** of these platforms? Is it algorithmic design (e.g., algorithms that favor one type of content over another)? Is it UI decisions (e.g., flagging content, warning labels)?

Suggestion:

"These political pressures result in specific design choices. For instance, algorithms are designed to automatically flag or demote certain content based on political sensitivities. User interfaces may include warnings or 'fact-check' labels, shaping how information is consumed and shared. These choices, often invisible to the user, reflect the intricate balance between political pressures and user autonomy."

3) Me: Could you help me to do grammar explanations and sentence corrections for the following sentences?

ChatGPT:

Absolutely! Please go ahead and provide the sentences you'd like help with, and I'll work on the grammar explanations and corrections.

Me: Candy taste sweet

ChatGPT:

The sentence "**Candy taste sweet**" contains two grammatical errors:

1. Verb Agreement:

- The subject "Candy" is singular, so the verb "taste" needs to agree with it. The correct form of the verb for a singular subject is "**tastes**", not "taste."

Explanation: In English, when the subject is singular, you generally add an "s" or "es" to the base form of the verb in the present tense. For example, "he eats," "she runs," or "it tastes."

- **Correction:** "Candy **tastes** sweet."

2. Article Usage (optional):

- Depending on context, you might want to add "**The**" before "Candy" if you're talking about a specific type or piece of candy. If you're referring to candy in general, this part can remain as it is.

Final Correction: "Candy tastes sweet" (or "The candy tastes sweet," if referring to a specific candy).