Thesis Project Portfolio

Visualizing Task Breakdown: An Interactive Force-Directed Graph Approach to Task Management

(Technical Report)

Invisible Governance: TikTok's AI Moderation System as an Instrument of Technological Politics

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis: Task Visualization Systems and Invisible Governance in Technology

My technical work and STS research are connected through the issue of how technology systems govern and impact human behavior, often in ways that are not immediately apparent to users. My capstone project develops an interactive task visualization system that decomposes a user's complex tasks into smaller, more manageable components. Paralleling this investigation, my STS research analyzes how TikTok's AI moderation system creates an environment where content creators cannot fully understand how or why their content is moderated, creating an imbalance of power that privileges platform interests over user agency. Both studies examine how technological design, and execution might create unseen power dynamics and influence user experiences, whether between social media platforms and content creators or users and task management systems.

My technical research focuses on optimizing a task management visualization system. Users can create tasks representing their everyday duties and portray them through hierarchical relationships on a graph structure. Selecting a node reveals a panel with the task's description and editing capabilities. The relationship between tasks becomes evident through the graph's physical layout, as it connects elements by naturally grouping related tasks. Interactions produce immediate visual feedback, advancing the user's sense of progress. While these features contribute to the application, the user study was designed to enhance how users prefer to interact with the system.

Using Langdon Winner's framework, my STS research examines how TikTok's AI moderation system serves as an instrument of technological politics. I argue that TikTok's algorithmic infrastructure embodies specific political arrangements that privilege certain voices while marginalizing others, functioning as a digital gatekeeper that shapes public discourse

through selective visibility, algorithmic bias favoring financial interests, and deliberate opacity. TikTok's algorithm includes content filtering policies that create power dynamics between the company and its users despite seeming politically neutral. This is a prime example of how its technical design is intrinsically political. The hidden power dynamics imposed between TikTok, content creators, and regular users because of this lack of transparency ultimately hinders user experience.

Working on these projects has made me realize how critical technological design choices are to impacting user agency and power dynamics. My technical project's emphasis on transparency and user control contrasts with the opacity and algorithmic bias in my STS research. This juxtaposition has made me more conscious of how design choices could either empower users or constrain their options, leading me to conduct a user study that optimizes users' wants instead of hiding their opinions behind an invisible wall. Insights from my STS research have inspired me to prioritize transparency, feedback, and user autonomy in my technical work, ensuring our system makes operations visible rather than hiding them behind opaque algorithms.