Arielle Moore

CS 370: Current/Emerging Trends in CS

2026-01-07

1-3 Assignment: Personal Assistants

In our daily lives, we strive and struggle to find an optimal balance between work responsibilities, personal commitments, and health routines. Navigating the sea of productivity apps designed to plan, schedule, and remind simply adds more weight to the cognitive burden of existing as a modern human, despite their intention of ameliorating these competing demands in our lives. A lack of tasking tools certainly is not to blame in this, the hyper-technological Contemporary Era. Rather, a deluge of competing tools and a lack of productivity centralization is the culpable combination behind these balance issues. A very thoughtfully-designed artificial intelligence (AI) personal assistant might be the answer to this problem: by learning behavioral patterns and helping proactively with curated decision-making and scheduling, a personal assistant can effectively take over executive functions for its user, enabling them to focus time and energy on actual tasks.

A proposed improvement to today's AI-driven personal assistants is to integrate a combination of machine learning, natural language processing, and adaptive scheduling. These AI systems already possess the ability to learn from user behavior and continuously improve recommendations, unlike their traditional rule-based predecessors (Freeman et al., 2024). The next phase of the assistant could leverage machine learning to automatically schedule tasks at optimal times by analyzing patterns in the user's work productivity, adherence to health and exercise, and any regular or irregular personal commitments. Natural language processing by way of conversational prompts could make tasks like adding or

modifying plans much easier. By integrating these subsets of AI into a personal assistant system, the assistant would eventually be capable of identifying when tasks are frequently postponed or canceled and adjust schedules accordingly. Measures such as these could strongly reinforce positive habits and reduce mental overhead.

Fortunately, this type of system could operate on existing consumer hardware such as smartphones, laptops, tablets, or even smart speakers, all supplemented by cloud-based services. Local device hardware would be responsible for handling user interaction while cloud-computing resources could manage data storage, model training, and large-scale processing (TechTarget, n.d.). Speech input and interface interactions would also be handled by local hardware, and then the cloud would run model training, inference, and synchronization across all services. Some key components to consider include a language model for conversational interaction, secure data storage infrastructure, and calendar and application integration services. Finally, APIs would enable the personal assistant to connect and interact with third-party platforms such as calendars, fitness trackers, to-do lists, and a variety of communication tools; with this integration, task coordination is centralized and scheduling is personalized (Macaron, n.d.).

Beyond current ethical concerns surrounding AI personal assistants such as data privacy and security, the proposed improvements raise other risks involving autonomy and behavioral influence. While the assistant's intended purpose would be to better help shape positive behavior, there exists the dilemma of excessive influence over a user's decisions. If poorly designed, the issue of behavioral nudging could quickly cross over into manipulation, especially if recommendations come with embedded commercial incentives (Callin, n.d.). When a user's personal agency is brought into question, another question arises: where does assistance end, and where does control begin?

Another looming ethical issue that would likely be exacerbated with these proposed integrations is algorithmic bias. AI systems rely on historical data and the information environment that mediates it has fundamentally degraded; reasons for this include the collapse of information hierarchy, recursive misinformation, human bias amplified by algorithmic incentives, AI-generated regurgitation, a collective loss of temporal context and expertise, the flattening of the information curve, and the erosion of institutional authority. For the end user, an assistant might reflect biased assumptions about facets of their own life surrounding productivity, work-life balance, and health norms. A poorly-monitored assistant is then liable to reinforce unhealthy routines or even favor certain priorities over others (Britannica Money, 2025). Another major concern of relying on cloud-based AI systems is the negative environmental impact given increased energy consumption, which tends to be overlooked when considering the ethics of AI (TechBullion, n.d.).

In conclusion, an AI-driven personal assistant capable of behavioral support and adaptive scheduling could very well be the next iteration of assistant systems, ostensibly improving productivity and life balance using existing surrounding systems. However, like all intelligent systems, it is absolutely crucial to carefully consider the ethical risks and implications related to security, privacy, autonomy, bias, and sustainability. The optimistic outcome of these systems is to provide enhancements to humanity rather than to undermine it, which can be achieved if these concerns are identified and addressed early on.

References

Britannica Money. (2025). *AI and ethics: 5 ethical concerns of AI & how to address them.*
https://www.britannica.com/money/ai-ethical-issues

Callin. (n.d.). *Ethical problems with AI in 2025.* https://callin.io/ethical-problems-with-ai-2/

Freeman, B. S., Arriola, K., Cottell, D., Lawlor, E., Erdman, M., Sutherland, T., & Wells, B.
(2024). *Evaluation of task specific productivity improvements using a generative
artificial intelligence personal assistant tool.* arXiv. https://arxiv.org/abs/2409.14511

Macaron. (n.d.). *Virtual AI assistant playbook.*
https://macaron.im/virtual-ai-assistant-playbook

TechBullion. (n.d.). *Ethical considerations in developing AI-powered assistants: Balancing
convenience and privacy.*
https://techbullion.com/ethical-considerations-in-developing-ai-powered-assistants-bala
ncing-convenience-and-privacy/

TechTarget. (n.d.). *Virtual assistant (AI assistant).*
https://www.techtarget.com/searchcustomerexperience/definition/virtual-assistant-AI-as
sistant