

A Framework for Agentic AI Information Delivery: When to Notify, Summarize, or Interrupt

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Introduction

Artificial intelligence (AI) systems are becoming an integral part of everyday work, shifting how individuals approach tasks and make decisions. In particular, agentic systems—AI tools capable of acting semi-independently once given a directive—offer new opportunities to both offload mundane tasks and enable previously unattainable forms of work. Yet, despite their potential, interacting effectively with agentic systems presents challenges. Users must conduct a form of miniature task analysis: clarifying their primary goals, breaking down processes, determining which components of the task can be delegated to the AI, and specifying the desired format of the output.

One especially important use case lies in research assistance and information gathering tasks, where a user assigns an agent to collect, synthesize, and present information. What remains poorly understood is how these systems should optimally deliver their findings back to the human user. Should results be reported incrementally as discoveries are made, or should they be consolidated into summaries at defined intervals? Should delivery be interruptive (such as notifications) or strategically timed to minimize disruption?

Design guidelines for human-AI interaction emphasize that systems should “time services based on context”—deciding when to act or interrupt based on the user’s current task and environment (Amershi et al., 2019). Empirical work in human-robot teaming shows trade-offs: the study *Exploring the Cost of Interruptions in Human-Robot Teaming* (Mannem, Macke, Stone, & Mirsky, 2023) finds that although interruptions (varying in timing, content, and proximity) degrade perceived helpfulness of the agent, the actual cost to performance on secondary tasks is relatively small. These findings suggest that timing and format of feedback from agentic systems may have more to do with user perception and subjective experience than just objective performance. This project seeks to fill that gap by conducting both a literature review and an experimental study that will examine preferences and performance outcomes under different feedback strategies: when notifications, summaries, or interruptions are delivered.

Research Questions

1. How do task type and information importance influence user preferences for when and how agentic systems provide feedback?
2. What presentation formats (real-time notifications, scheduled summaries, strategically timed interruptions) best support effective human-AI collaboration across different work contexts?

Methodology

Phase 1: Literature Review

- Systematically review HCI, cognitive load theory, interruption management, and human-AI collaboration literature (including Amershi et al., 2019; Mannem et al., 2023).
- Identify key factors influencing both preference and effectiveness of feedback (e.g. urgency, task complexity, current cognitive load).
- Use those insights to shape the design of the experiment.

Phase 2: Online Experiment

- **Participants:** ~100 adults recruited via Prolific who regularly perform information gathering or research tasks digitally.
- **Design:** A factorial design manipulating:
 - Task type: simple vs complex
 - Information importance: critical vs non-critical
 - Feedback delivery mode: real-time notification; scheduled summary; strategically timed interruption
- **Procedure:** Each participant is assigned an information-gathering task. The AI assistant delivers results under one of the feedback modes. Afterwards, participants evaluate their experience.

Measures

- **Objective:** Task accuracy, completion time, error rate.
- **Subjective:** Satisfaction with feedback mode; perceived cognitive load (e.g. NASA-TLX); perceived collaboration effectiveness.
- **Behavioral:** Distraction frequency; response time to interruptions.

Expected Outcomes

- **A framework** to guide the design of agentic systems, offering recommendations for when and how feedback should be delivered to best support human–AI collaboration.
- **A research presentation at the ORCA Research Fair**, where findings will be shared with peers, faculty, and the broader academic community.

Funding Timeline Statement

I am requesting a **SPRING 2026 funding timeline**.

Project Timeline (October–May 2026)

Phase	Activity	Dates
IRB Preparation	Create and submit IRB application	October–November 2025
Survey Preparation	Finalize instrument; pilot testing	February 2026
Data Collection	Recruit & field survey	March 2026
Analysis & Framework	Quantitative + qualitative analysis; draft framework and flowchart	April 2026
Manuscript & Poster	prepare, edit, and revise manuscript	May 2026

Student/Faculty Mentor Roles

- **Student Investigator:** Oversees all project phases — design, IRB prep, data collection, analysis, framework development, writing, poster.
- **Faculty Mentor:** Advises on survey design, methodology, compliance (IRB), interpretation of results, and feedback on writing/presentations.

Prior Funding: I have not received previous internal funding.

Budget and Budget Justification

- **Participant Compensation & Research Costs:** ~\$500 (100 participants at ~\$5 each, plus survey hosting fees).
- **Student Stipend:** ~\$2,000 (160 hours of effort).
- **Total Requested:** \$2,500.

Justification: The compensation ensures an adequate sample and fair payment; the stipend covers the student's labor across all phases at a rate of \$12.50 per hour. No travel or equipment costs expected.

References

- Amershi, S., Weld, D., Vorvoreanu, M., Fournery, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). *Guidelines for Human-AI Interaction*. Proceedings of CHI 2019.
- Mannem, S., Macke, W., Stone, P., & Mirsky, R. (2023). *Exploring the Cost of Interruptions in Human-Robot Teaming*. IEEE-RAS Humanoids 2023.



September 15, 2025

Dear Members of the FUSE Grant Committee,

I am writing to express my willingness to serve as a faculty mentor for Jack Rygg in support of their Fund for Undergraduate Scholarly Experience (FUSE) grant application. This project aims to explore how agentic AI systems can effectively deliver feedback to users during research and information-gathering tasks. By conducting both a literature review and an experimental study, the project will examine user preferences and performance outcomes under different feedback strategies, such as notifications, summaries, and interruptions. The ultimate goal is to develop a framework that guides the design of AI systems to optimize human-AI collaboration

I am committed to supervising Jack throughout the course of this project, providing guidance in research design, implementation, and dissemination of findings. I am confident in their ability to successfully complete this study and believe the project will make a valuable contribution to their scholarly and professional development.

If you require any additional information, please do not hesitate to contact me.

Sincerely,

Dr. Joel Elson