

Office-Mind AI: A Generative AI Tool for Gig Workers

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ABSTRACT

This paper studies the design of an AI tool that supports gig knowledge workers, rather than displacing them, focusing on text-based generative AI technologies. Through a formative study involving interviews and design activities, gig workers shared their views on text-based generative AI and envisioned applications where AI acts as managers, secretaries, and communication aids. Leveraging these insights, we created a generative-AI enhanced tool, Office-Mind AI, to aid gig workers. Our research advances the conversation around algorithmic labor by designing a worker-focused intelligent tool. This tool harnesses collective intelligence among workers and AI, fostering productive human-AI partnerships. We conclude by discussing the future prospects of collective intelligence tools designed for worker-AI collaborations.

CCS CONCEPTS

• **Human-centered computing**; • **Collaborative and social computing systems and tools**;

KEYWORDS

Gig work, Crowdsourcing, Future of work, Generative AI, Human-AI Collaborations

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1 INTRODUCTION

Recently we have seen a surge in companies focused on generative AI, with entities like OpenAI championing missions to ensure AI benefits humanity [6, 12]. While these ambitions are commendable for their focus on societal good, it is crucial to recognize the potential for such AI advancements to displace human workers, particularly in tasks that are becoming increasingly automated [15, 17]. This trend poses a significant risk to jobs traditionally filled by gig knowledge workers, i.e., those workers who are involved in analysis, problem-solving, and creative tasks [16]. Together, this underscores the urgency to address AI-induced displacement within the gig economy [9, 11, 13]. As a result, generative AI technologies have sparked controversy and debate, highlighting the divide between those calling for regulatory measures to prevent worker

displacement [7, 17], and others who see the technology's potential to augment rather than replace human labor [1]. However, despite this optimism, there is a gap in our understanding of how to design generative AI technologies to best serve workers [5, 18]. In this paper we focus on studying how to design generative AI tools for gig knowledge workers. The challenge lies in addressing the unique demands and constraints faced by them, as they are workers who operate without the support structures typical in more traditional employment settings [10, 16]. This underscores the need for a nuanced approach to designing generative AI tools that align with the specific needs and conditions of the gig economy workforce.

In this paper, we address this knowledge gap by taking the lead in understanding the generative AI technologies that gig knowledge workers both envision and desire for their jobs, and studying the usability of one of such tools. To achieve this, we first conducted an IRB-approved formative study that included interview sessions with design activities involving 21 knowledge gig workers from the Upwork platform. Our design activities concentrated on exploring text-based generative AI tools, such as ChatGPT, but as envisioned by workers. The focus on this technology was chosen because a significant portion of gig knowledge workers' labor is text-based [4]. While concentrating on this technology, we also welcomed participants' suggestions for other technological directions. Our interviews and design activities helped us to gather valuable insights into worker concerns, perspectives, and their future visions regarding generative AI tools for gig knowledge workers. Upon conducting an analysis of our interview and design sessions, a noteworthy finding emerged: gig knowledge workers envision text-based generative AI technology assuming roles akin to those found in traditional work structures, particularly in managerial and secretarial capacities. However, they imagined these intelligent agents working independently for them and not for the gig platform. Furthermore, these workers expressed a willingness and comfort in leveraging AI for worker-client communications, encompassing general interactions, negotiations, and self-marketing endeavors.

Armed with these insights, we created an AI enhanced tool - Office-Mind AI¹ - that could support gig knowledge workers in their job. Our tool integrates functionalities akin to two conventional office positions—managers and secretaries—to assist workers in executing a range of tasks highlighted as key in our interviews. These tasks include generating biographies, crafting emails and cover letters, performing translations, summarizing texts, and creating schedules. We conducted an evaluation of Office-Mind through an IRB-approved usability study involving 16 gig workers sourced from the Upwork platform. In this usability study, participants completed various tasks using the Office-Mind AI. Following these tasks, they were invited to share their feedback on the tool and

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¹Watch our AI-enhanced tool in action in this video demo: <https://vimeo.com/920192151?share=copy>

complete the System Usability Scale (SUS), a recognized methodology for assessing a system's usability [2, 14]. Participants expressed that Office-Mind AI offers convenient, and time saving solutions to challenges that gig workers face. Our study also showed that Office-Mind was easy to use, and scored within the 96th-100th percentile range of usability scores with a median SUS value of 87.5 [14], which categorizes it as having "Excellent" usability [2]. We finish the paper discussing the future of generative AI tools for workers. Our research not only contributes to our understanding of generative AI's potential in gig work, especially text-based generative AI for gig knowledge workers, but also paves the way for the collective intelligence community to delve into human centered design research tailored to this unique workforce.

2 FORMATIVE STUDY: METHODOLOGY

To study and create text-based generative AI tools tailored to the specific needs of gig workers, we initiated our research with a formative study. This initial phase provided valuable insights that guided our design and creation of AI tools closely aligned with gig workers' requirements. Our formative study's structure is outlined in Fig. 1.

3 OFFICE-MIND AI: A GENERATIVE AI TOOL FOR GIG WORKERS

Motivated by our formative study, we created Office-Mind AI: an online platform that integrates generative AI with a user-friendly interface. Our aim was to empower gig knowledge workers in their roles by providing them with the generative AI tools they envision and need. Our formative study highlighted how workers wanted AI that could enhance their capabilities and fill the support lacking in the gig economy. It also emphasized workers' preference for having AI managers and AI secretaries that could personally assist them, rather than serve the gig platform. Hence, we designed Office-Mind AI to function as virtual secretaries and managers, operating within an independent website dedicated to supporting workers rather than being tied to a specific gig platform. Fig. 2 presents screenshots of Office-Mind's interface.

To implement Office-Mind AI we decided to employ a hybrid design: combining forms and chatrooms for content creation, along-side backend prompt engineering by connecting with OpenAI's API on our backened server. We integrated forms because we considered they were a straightforward way for non-technical users to share their expertise with AI, making them ideal for gig workers who can have diverse technical backgrounds [8]. Their simplicity ensures almost anyone can use them, promoting inclusivity in knowledge sharing. Additionally, these interfaces are easy to implement and adapt [8], crucial for rapidly responding to the evolving demands of gig work. Therefore, we believed that form-based interfaces would provide an accessible and flexible mechanism to foster seamless worker-AI collaboration in the fast-paced gig market. Accordingly, for each major task where we sought generative AI support for workers, we developed a form allowing workers to input any knowledge they wanted the AI to understand about the task and their objectives. Using a REST API, we created corresponding endpoints for each form. These endpoints utilize specific context prompts to guide the GPT model in understanding its intended role in assisting

the worker. Fig. 2 presents examples of the forms we created within Office-Mind AI.

Upon form submission, the GPT model receives its instructions (prompts) along with the worker's inputs. The model then generates an initial response, which is displayed below the form. Additionally, we integrated a chatroom component beneath the AI-generated content. Within this chatroom, workers can collaborate with the AI to refine the generated output further. This setup facilitates curated knowledge exchange between human workers, who further share their expertise, needs, and contextual information, and the AI, which assumes various assistive roles based on the information supplied by the worker in each case.

Since our formative study revealed workers' desire for generative AI capable of fulfilling managerial and secretarial roles, we incorporated modules within Office-Mind to emulate this.

3.1 Manager Module

This module serves as a personal manager for gig workers, combining collective intelligence with generative AI to enhance time management and personal branding. The platform crafts tailored schedules by weaving gig workers' project specifics and their preferences for work-life balance into its dynamic dashboard. It then employs generative AI to formulate initial schedules for the workers. These preliminary schedules are further refined via chat-based interactions, ensuring a customized and adaptive planning experience. This module bridges an important existing gap in gig work by offering task scheduling support, combining worker insights with AI. The module acts as a manager, helping gig workers meet deadlines and arrange their preferred work schedules.

In terms of personal branding, the module aids workers to collaborate with AI to craft professional biographies and cover letters that highlight their strengths and align with the needs of clients. Through a chat interface, workers can then also refine these documents with AI assistance, addressing the gap in gig work related to self-branding for client attraction [3]. The module here also functions as a manager that focuses on empowering workers to showcase their skills and talents, thereby helping them to more easily reach their professional aspirations.

3.2 Secretary Module

This module acts as a personal secretary for gig workers, combining an intuitive dashboard with generative AI technology to help workers manage their administrative tasks. These tasks range from drafting emails and conducting thorough grammar checks to offering language translation services and crafting Non-Disclosure Agreements (NDAs). Through its user-friendly interface, gig workers can convey their specific needs for emails, translations, grammar corrections, and NDAs. In response, the generative AI utilizes its extensive knowledge base to compose professional-grade documents tailored to each requirement (Fig. 2). The module's chat-based interface also facilitates a dynamic interaction, allowing workers to refine and enhance these documents collaboratively. This process not only leverages the workers' unique insights but also fosters a robust human-AI partnership, ultimately resulting in the creation of high-quality documents that can meet the professional demands of their gig work.

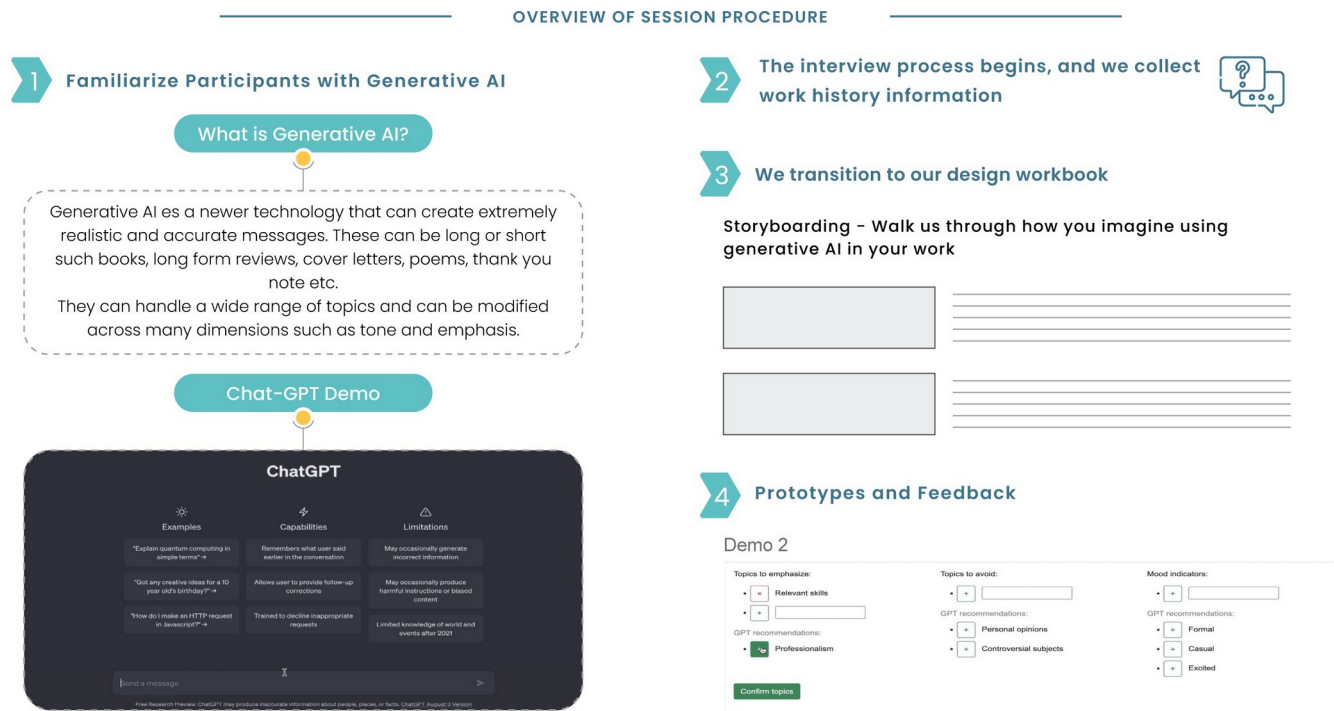


Figure 1: Formative Study Procedure: 1. Participants are familiarized with Text Based Generative AI. They are given a working definition, and provided a demo of ChatGPT. 2. The interview process begins, and we collect work history information. 3. We begin using the design workbook. Here we collect features, use-cases, and concerns for using Text Based Generative AI in participant's gig knowledge work. We also extract imaginaries from participants regarding the roles and forms generative AI can take to assist them. 4. Participants are shown prototype applications and feedback is provided in the form of feature and/or design suggestions.

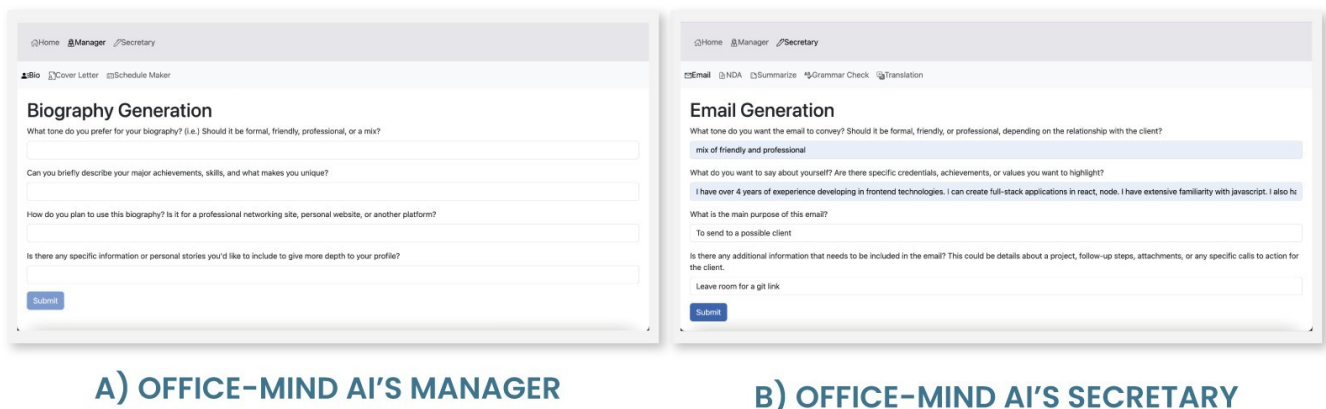


Figure 2: Office-Mind AI's Manager and Secretary

4 CONCLUSION

In this paper, we argue for using AI to enhance rather than replace workers, focusing on gig knowledge workers in the gig economy.

Through an IRB-approved formative study, including co-design sessions and interviews, we explored these workers' needs and preferences for AI assistance. Our findings indicate a preference

for text-based generative AI to take on traditional workplace roles, such as manager and secretary, offering features like schedule management and email generation. Using insights from our study, we developed Office-Mind AI, a tool designed to augment gig workers' daily tasks without replacing them. Through an IRB-approved usability study, we evaluated the tool's effectiveness in supporting gig workers, highlighting the potential of text-based generative AI to enhance work processes. These results lay the groundwork for future research to refine and expand AI tools in the workplace, ensuring they complement human workers effectively.

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