



# Working Together: Algorithmic Management and Peer Relationships in the Hospitality Industry

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## Abstract

Algorithmic management is transforming traditional face-to-face service sectors like hospitality. To understand this phenomenon, we conducted an interview study in a unionized, mid-sized urban hotel on the West Coast of the USA. Through this work, we examine how an algorithmic management (AM) platform mediates work in a housekeeping department. Our analysis highlights the effects of AM on social processes, revealing that despite careful configuration, the tool's implementation still challenges traditional communication and coordination. This study contributes empirical evidence on AM impacts in a collaborative service environment, emphasizing the importance of organizational dynamics in AM design and implementation. We offer design opportunities for flexible workplace technologies that support, rather than frustrate, the relational aspects of service work.

## CCS Concepts

• **Human-centered computing** → HCI theory, concepts and models; Empirical studies in collaborative and social computing.

## Keywords

Algorithmic management; peer coordination; working relationships

### ACM Reference Format:

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## 1 Introduction

The nature of high-touch hospitality work is shifting from traditional face-to-face service to more technology-driven interactions. Guests have experienced technologies such as digital check-in, app-based room service, and chatbots, which are changing the experience of hospitality [55, 58], promising guests more instantaneous and flexible service than ever before. However, behind these guest-facing interfaces lies an invisible network of labor, often coordinated by algorithmic management technologies (AMs). Many guests may not realize that when they use a hotel app to update their check-in time, they may instigate a chain of AM orders which are received by housekeeping supervisors, guest room attendants (GRAs), and housemen.

In this paper, we explore how algorithmic management (AM) mediates work in a housekeeping department. To develop our analysis, we conducted interviews and field observations in a single, unionized, mid-sized urban hotel on the West Coast, which we call Hotel WCM (West Coast Mid-sized) [37]. For the past 15 years, Hotel WCM has used an algorithmic management tool that we will



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call UpKeep<sup>1</sup>, through which almost all roles in the department create, receive, and track housekeeping tasks. UpKeep mediates room cleaning assignments, guest requests, maintenance work orders, and text-based communication across the property. Many hourly WCM workers are long-time users of UpKeep, for whom the tool has become central to hotel operations. With this research, we sought to answer the following question: How do WCM workers across roles perceive the impacts of UpKeep on their working relationships?<sup>2</sup>

The same AM system is often tailored by hotel management to fit property-specific needs. At Hotel WCM, collective bargaining with the labor union resulted in configurations designed to enhance worker autonomy. Despite this, the shift to AM-mediated work presents more subtle relational effects for roles across the department. For example, while UpKeep promises increased accountability and a standardized communication protocol, workers would often rely on their interpersonal relationships to facilitate the completion of their duties. Others felt torn about using UpKeep to create orders which would assign tasks to their peers. These data suggest how, by shifting individual workflows, AM also challenges how workers coordinate responsibility, communicate context, and ultimately connect with their peers. As AM technologies become increasingly prevalent across varying service sectors, it is essential for the HCI community to develop a nuanced understanding of how algorithmic control affects not only individual workers, but the team dynamics that make work meaningful for millions of people [3].

We contribute new knowledge about algorithmic management technologies in high-touch service work, an intersection often overlooked by both HCI literature and literature on AMs. Our work contributes to two gaps in these literature bases. While previous studies have explored the peer-level social disruption caused by workplace technologies in white collar settings, few have examined the control dynamics introduced by algorithmic management (AM) applications in face-to-face service settings. Meanwhile, most critical AM literature has concentrated on the characteristics of solo gig work [31, 36], leaving a gap in understanding how AM affects peer-level working relationships within organizations. We contribute refined perspectives on how AM affects not only the relationship between workers and managers, but how use of AM may mediate relationships between *peers and workers in multiple roles*. We end by suggesting how workplace technologies like UpKeep would improve if they were designed to be more attuned to the relational dynamics that underpin existing workflows.

## 2 Related Work

### 2.1 Working relationships in hospitality

The importance of working relationships has long been expounded in management, organizational psychology, and sociology literature. Traditional face-to-face interactions have been found to positively correlate with social support [15, 18], higher rates of learning [38, 39, 65], and physical & psychological worker wellbeing

<sup>1</sup>We use a pseudonym throughout this paper to preserve the anonymity of both the vendor and the participants.

<sup>2</sup>In this study, we do not demonstrate causal impact or perform quantitative measurement, but instead develop a qualitative description of how UpKeep is used and configured in Hotel WCM.

[17, 22, 34]. Sociology scholar Alison Pugh (2024) describes working relationships through the lens of connective labor: the effort to create, maintain, and manage relationships in the workplace [50]. Connective labor is particularly essential in environments like hospitality, where the quality and experience of interactive service work for the customer depends on the quality of interpersonal connections among colleagues. In the fast-paced and physically demanding world of housekeeping, workers' sense of belonging and mutual respect can make a significant difference in how they handle stress and challenges on the job [16, 61, 62]. Workers who care about each other are more likely to lend a hand when someone is overwhelmed, and go the extra mile to ensure that everyone succeeds. These bonds are further strengthened through the solidarity that housekeeping departments share as a largely immigrant and female workforce [7, 67]. In unionized shops, strong working relationships are also a function of organizing culture; unionized workers recognize the need to support each other through economic and organizational pressures [1, 4].

Many hotels recognize that strong working relationships are good for business [12, 21, 25, 64]. Traditionally, hotels would foster these relationships by maintaining a physical presence, such as managers walking the floor to communicate with GRAs and housemen [56]. Guest services were similarly conducted in-person, with front desk and housekeeping staff engaging directly with guests. Most importantly, healthy working cultures support participation in decision-making processes, recognizing workers' right to have a voice in shaping their work [43]. Yet, in hospitality and other service industries, these established cultures of face-to-face relationship-building and worker voice are being reshaped by technology. Workers may have increasingly little control over how incoming AM technologies are changing not only their daily work, but their interactions with coworkers and managers.

### 2.2 Technology and the disruption of social processes

To understand how technology reshapes working relationships, we explore the rich literature on the disruption of social processes. We chart the parallels and distinctions between technologies developed for white collar collaborative knowledge work settings (e.g. office work) and algorithmic technologies in low-wage settings.

**2.2.1 Concepts from early workplace technologies.** In 1994, CSCW scholars Rouncefield et al. discussed the "sociality of work," emphasizing how physical environments encode a workplace's social order, supporting collaborative norms and informal accountability processes through the visible allocation of responsibilities (e.g., a stack of reports on someone's desk) [53]. Grudin (1994) noted that CSCW systems can disrupt these organic social processes by formalizing informal communication and creating intrusive oversight into users' workflows [27]. This oversight (often perceived as surveillance) was a central tension in the adoption of early CSCW systems; researchers reported on how technologies that granted managerial oversight replaced nuanced, collaborative practices with rigid, system-enforced interactions [8, 48, 51]. Suchman (2002) termed these "technologies of accountability," designed to make work visible, measurable, and reportable, aligning with managerial priorities and formal control structures [59]. While these systems aimed to

provide traceable records of actions for managers, they often failed to address how the burden of technological documentation and maintenance can exacerbate workplace hierarchies.

Bowers (1994) described how early networked systems required significant effort to sustain, often necessitating redundant paper trails to ensure reliability. In response, workers developed workarounds that often undermined the intended documentation functions and introduced friction between workers. Orlikowski (1992) found that while new groupware software provided benefits, they also increased workloads for specific roles, particularly those tasked with data entry or resource maintenance. Grudin (1994) framed these challenges as a "disparity in work and benefit," where the effort of maintenance creates invisible work for certain users, while the primary advantages accrue to managers and upstream beneficiaries. This has remained a foundational concept in contemporary HCI research, despite the increasing sophistication of technological change in the workplace, from AI processes to remote work.

**2.2.2 Distinctions of AM in low-wage settings.** Unlike many early CSCW systems, which were often designed to assist professional white collar workers, the adoption of technologies in low-wage settings is often mandatory [2, 14]. Because technologies have the potential to exert significantly greater control over workers in low-wage settings compared to communication-based "assistance" technologies [6, 40], the shift to algorithmically-mediated coordination warrants study. Studies on the integration of AI in waste labor, like janitorial work and recycling [35, 57], show that technology implementation often increases demands on essential workers when it doesn't function as intended or doesn't take existing workflows into account. Looking across essential industries, Fox et al. highlight the "patchwork" of the human labor that bridges gaps between what AI purports to do and what it actually accomplishes [23]. Moradi et al. further describe "relational patchwork" performed by cashiers at self-checkout machines [42]. When finding themselves positioned as rule-enforcing adversaries to customers, cashiers offered excessive customer service to preserve positive interactions and mitigate conflict [ibid]. In knowledge work settings, where face-to-face interactions are limited, patchwork instead increases digital-work demands and undermines trust by reducing opportunities for human interaction [5, 11, 25].

One of the most common applications of technology in low wage work is via algorithmic management, in which technology is used to oversee workers remotely and facilitate automated or semi-automated decision-making based on algorithms determined by management [44]. In settings like trucking, warehousing, and ride-share work, critical research on algorithmic management has largely focused on the control relationships between workers and algorithmic systems [9, 20, 36, 46, 47, 49, 54, 69]. When algorithms take the place of human managers, they create distinct barriers for individual workers in challenging directives or participating in the labor process [52, 66]. Furthermore, this dynamic can exacerbate the power imbalances introduced by other workplace technologies, as workers often lack transparency into how these algorithms function or the ability to challenge their decisions [10, 31, 36, 41]. In workplaces where AM works alongside human managers, research highlights that workers are more likely to perceive breaches in psychological contracts when human managers do not meet

relational expectations, while algorithms are considered reliable for transactional obligations but less capable of maintaining trust in employer-employee relationships [60]. This shift can lead to a depersonalization of the worker-manager relationship, as decisions about tasks, performance, and disciplinary actions are mediated through algorithmic logic rather than interpersonal negotiation [63].

**2.2.3 Addressing gaps in AM literature.** These studies contribute to a broad understanding of how algorithmic management is reshaping workplace relationships between managers and workers. However, the literature is still sparse in addressing how AM changes working relationships across whole teams. There are a few good reasons for this gap. Algorithmic management has developed hand in hand with gig work platforms [44]. Due to the solo nature of gig and platform work [31], the research tends to focus on gig workers' relationship to the AM itself, and not necessarily to their peers. In response, studies have leveraged participatory design methods to develop collective power among independent gig workers, enabling greater peer support, data-sharing, and mutual aid for historically atomized workers [29, 30]. Scholars have also designed policy recommendations based on workers' needs, some of which would increase the peer network available to gig workers [68]. As AM is deployed more widely beyond gig and platform work, researchers call for increased attention to the impacts of AM in traditional low-wage settings [33]. In particular, scholars emphasize the need for finer distinctions around the functions of algorithmic control [28, 45]. We explore how AM is deployed in a markedly different environment: a traditional face-to-face service setting, which requires workers to constantly interface with managers, peers and coworkers across departments. By better understanding how AM impacts working relationships at Hotel WCM, we contribute to knowledge on similar service sectors.

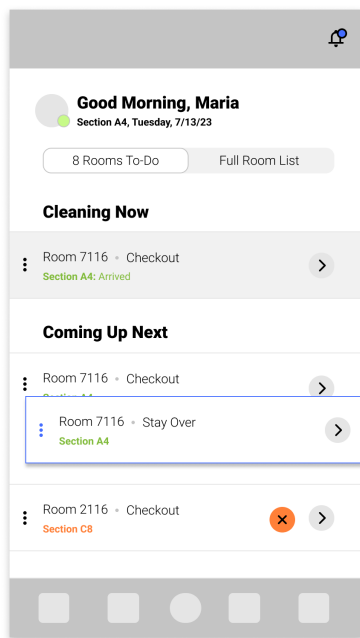
### 3 Background on Hotel WCM & UpKeep

Our research team represents an interdisciplinary collection of experts in technology and human interactions, labor relations, human resources, hotel and hospitality management, and labor economics. Our academic members conduct work in collaboration with UNITE HERE, an international labor union that represents hotel workers. Together, we seek to understand the changing landscape of automation in the hospitality industry and to help hospitality workers understand, redesign, and effectively utilize new technologies.

UpKeep is a phone and browser-based app algorithmic management tool which coordinates room cleaning assignments and guest services across the department. It has been widely used in the hospitality industry for a number of years, and was developed by a third party hospitality technology company. Before the use of AMs in housekeeping, daily assignments were distributed on paper, and GRAs could determine the order of the rooms to clean using paper documentation. UpKeep also tracks guest requests and maintenance tickets throughout the hotel, delegating tasks to workers and timing their completion.

Despite these functions, we note that it differs from more traditional (AM) systems, such as those used in warehousing or ride-sharing, in several significant ways. UpKeep focuses on optimizing the return of specific rooms as quickly as possible, prioritizing

management needs over worker experience, efficiency, or even control. Profits in the service industry are uniquely tied to loyalty programs, which emphasize enhanced guest satisfaction to encourage repeat business. For example, the UpKeep system might assign a VIP room first, regardless of its location relative to other tasks, disrupting the sequential workflow of GRAs. This contrasts with other common AM systems, which aim to minimize labor costs through just-in-time delivery, step-by-step task directives, and algorithmic incentives to make individuals work faster. UpKeep is also less surveillant than traditional AM systems. While it requires that workers manually document their progress, it collects fewer data points and offers some flexibility in how tasks are completed. UpKeep allows all roles, not just managers, to put in work requests that algorithmically assign tasks to others, and to message each other. UpKeep cannot automatically fire or discipline employees, and we have not heard of instances when it was used by human managers for disciplinary purposes.



**Figure 1: This is an interpretive prototype of the UpKeep app, showing how GRAs at Hotel WCM can use UpKeep to receive room assignments, and re-order their room assignments throughout the day [56].**

In addition to these baseline functions, the tool also includes dynamic and highly configurable software, which is implemented differently across hotel properties. UpKeep’s supervisor-facing interface can be configured to varying levels of algorithmic assistance, from auto-dispatch to manual assignment dispatch. UpKeep’s worker-facing interface can be configured with varying levels of algorithmic control, such as letting workers change their task order by skipping rooms in the app, or requiring workers to complete tasks in the order they were assigned. While we keep the UpKeep

app anonymous for the purpose of this study, previous research [56] has resulted in prototypes which mimic the basic room ordering functionality of the AM tool.

The way that UpKeep is configured in any particular property can change, thus leading to high variation in how workers experience agency under the AM. These configuration differences make it harder to generalize about AM in the hospitality industry. Over the course of our interview study, we learned of many configuration decisions that demonstrate Hotel WCM’s relatively careful implementation of UpKeep and openness to continual improvement. By the end of our visit, we were able to understand how UpKeep was being utilized by workers and hotel managers. Our research team generated a series of opportunities that could be delivered to hotel management around the configuration of digital tools to increase work satisfaction.

## 4 Methods

### 4.1 Interviews and analysis

We conducted a three-day site visit to Hotel WCM in May of 2023. We had preparatory meetings with hotel and housekeeping management, developed questions to guide observations and interviews, and derived a basic understanding of the properties of the hotel and its cleaning operations. We received an organizational chart as well as additional information about the hotel and its services. All interview questions and site visits were approved by our university IRB. We conducted semi-structured interviews with 60 individuals, which spanned members of the housekeeping department and other roles in the hotel: housekeeping management, guest room attendants, housemen, public area attendants, guest service agents, and utilities & engineering. We also conducted interviews with the WCM IT manager, who was responsible for implementing and troubleshooting UpKeep. Detailed demographic data were not collected for this interview study to protect participant privacy and ensure confidentiality, given the sensitive nature of workers’ roles and the potential for identification within a smaller workforce. Instead, we provide a description of the worker roles we spoke with in a table below.

Our interviews revealed a portrait of the hotel staff. Hotel WCM workers represent a diverse set of languages and nationalities, including Cantonese and Spanish as first languages. Many workers are BIPOC and/or immigrants. The GRAs we spoke with were all female, while housemen were largely male. Public area attendants were both male and female. Management was also evenly split across gender, with about 1-2 managers for every 10 GRAs at the hotel.

We conducted both one-on-one intercept interviews and group interviews[32]. Intercept interviews are brief, informal interviews conducted by researchers who talk to workers in between their daily tasks. We had 15-30 minute intercept interviews with various roles in the department, including IT, clerks, and management. We conducted ten-minute intercept interviews with groups of GRAs and housemen, who had very tight schedules. We used a semi-structured interview format, focusing on workers’ interactions with UpKeep, sentiments about the AM, descriptions of their typical workflow, and their role within the department. Participants could opt to allow the interviews to be recorded. We took field notes for

**Table 1: Participant Roles at Hotel WCM**

| Role                    | Union representation | Responsibilities  | Participants |
|-------------------------|----------------------|---|--------------|
| IT Management           | No                   | Implement technology throughout the hotel and troubleshoot issues.  | 1            |
| Utilities & engineering | No                   | Perform preventive maintenance and repairs throughout the hotel. Communicate via UpKeep.  | 2            |
| Guest Room Attendant    | Yes                  | Clean guest rooms via UpKeep assignments, input UpKeep service requests and work orders that are distributed to housemen and maintenance personnel.   | 37           |
| Houseman                | Yes                  | Run linen to and from housekeeping closets, replace some room amenities, such as lightbulbs and shampoo. Respond to housekeeping related service requests, such as delivering towels and other housekeeping related items to hotel guests.            | 7            |
| Public Area Attendant   | Yes                  | Responsible for the cleaning and care of public areas of the hotel, such as the lobby, guest room corridor, elevators, etc. Respond to public area related cleaning requests.   | 4            |
| Dispatcher / Clerk      | Yes                  | Break out the house (initial room cleaning and related assignments for each housekeeping shift). Dispatch cleaning assignments to GRAs, public area attendants and housemen throughout the day via UpKeep. Dispatch maintenance and service requests. | 1            |
| Housekeeping Management | No                   | Manage resources to ensure guest satisfaction and the condition and cleanliness of the property, use UpKeep to facilitate this work.  | 6            |
| Front Office Management | No                   | Manage front office operations, enter and monitor guest requests through the UpKeep   | 1            |
| Guest Services          | No                   | Dispatch guest service requests to housekeeping using UpKeep. Track fulfillment of guest requests.  | 1            |

every interview and collected 14 interview transcripts along with field notes.

Some of our data takes the form of direct quotes from participant interviews, while some is from field notes, which take on a more narrative format [19]. In addition to interviews, researchers also conducted field observations at the hotel. We attended morning briefing meetings and observed workers pick up their devices and carts to begin their day, aiming to capture the integration of technology into routine activities.

We employed a team-based, flexible coding approach to analyze our data using NVivo 14 [24]. This approach involved two stages of coding. In stage one, we developed 36 index codes to capture broad themes in the data and to establish inter-coder reliability [13]. Index codes are big buckets that were meant to help initial coding proceed more quickly across our large research team. Examples of our broad index codes include "addressing problems," "tech configuration," and "views on management." Our team participated in two one-hour training sessions on the index coding process and met regularly to discuss questions and make revisions [13]. To further ensure reliability, three expert reviewers from our research team, who were not directly involved in the interviews, reviewed our index coding.

Once the index coding was complete, we proceeded to the second stage: fine-grained coding of the bigger index code buckets. We first generated a list of analytical or inductive codes, derived from a set of six initial transcripts. These codes were refined through two iterations, during which researchers created memos on how the codes performed as new transcripts were added. As the team met

to refine our coding dictionary, we found that some of the most interesting and hardest to place codes had to do with the social dynamics between workers, and included communication between peers, and tasks which included multiple roles present. The final result included 206 inductive codes, which were sub-codes inside of the index codes. For instance, our index code "addressing problems" included a number of inductive sub-codes such as "talking to peers about confusing assignments" and "reporting issues to the union steward." We applied these inductive codes to both the transcripts and the field notes. Our findings are derived from the most relevant subset of refined inductive codes.

## 4.2 Limitations

Our research takes the form of a qualitative investigation of a single research site, observed over a three-day period. The amount of time we had with interview participants was limited. We conducted interviews in English; because some workers were more proficient in English than others, those who could speak more fluently were often more vocal in group interviews. Finally, we note that even though Hotel WCM welcomed us to observe their practices and were interested in continuous improvement, our findings may not be generalizable to the hotel industry as a whole.

## 5 Findings

In this paper, we consider how the implementation and configuration of UpKeep may either challenge or enhance perceptions of working relationships at Hotel WCM. We discovered two UpKeep

configurations made by Hotel WCM, self-sequencing and manual dispatch. We first consider how these configurations impact relationships between workers and managers, focusing on themes of managerial visibility and the documentation labor such visibility requires of workers. We then discuss how workers rely on their interpersonal skills to resolve ambiguities and coordinate tasks that the algorithm overlooks, complicating the standardization of work intended by UpKeep. We end by considering how the standardization of UpKeep impacts peer relationships, such as what happens when workers use the AM to assign responsibility for contested tasks. Throughout, our findings include an interpretive analysis of how workers at WCM use UpKeep, as well as when WCM workers choose not to use UpKeep to get things done.

A vignette of one early weekday morning stand-up meeting drawn from field notes at WCM helps to understand the context of hospitality work:

*At 7:55 a.m., our research team gathered in a small break room, where around 20-30 housekeepers, dressed in their crisp black uniforms and masks, were waiting for their morning stand-up meeting to begin. At precisely 7:59 a.m., Ruby<sup>3</sup>, a housekeeping manager easily distinguishable by her red scarf and infectious enthusiasm, stood before the assembled group. She broke the morning silence with a few sung notes, capturing everyone's attention. The room buzzed with energy as she led the group in a spirited rendition of "Happy Birthday" for a housekeeper named Alicia, with the birthday wish being for good tips. Ruby then announced that the hotel was at 79 percent occupancy for the day and rallied the team with a loud "Go [team]!" in anticipation of the evening's local sports event.*

On a day like this one, it was easy to see how the housekeeping department generates over 3,000 service and maintenance tickets each month, more than any other department in the hotel. Each GRA is responsible for cleaning 14 rooms per day. With approximately 30 rooms per floor, there are typically two GRAs per floor, with carts conveniently stationed on each floor to minimize travel. The hotel requires about 25-30 GRAs on duty at any given time to keep everything running smoothly.

To begin their day, WCM GRAs pick up a mobile phone used to access their UpKeep account. GRAs see their 14 room assignment list for the day, which is generated partly by the AM and partly by the morning housekeeping dispatcher, who is responsible for "breaking out the house." As new rooms and other guest requests come up during the day, GRAs and housemen often receive additional assignments on their devices from the dispatcher, the front of house, and guest services. As the day went on, we witnessed GRAs using UpKeep to update their task statuses (e.g., "in progress," "completed") in real time.

## 5.1 Assignment configurations in UpKeep

Hotel WCM configured UpKeep in two ways that provide more autonomy to human workers: first, the ability for GRAs to self-sequence their room assignments, and second, the ability for dispatchers to manually distribute tasks. As we described in Section

3.1, these configurations contrast traditional implementations of AM, which often limits workers by giving them little to no control over their tasks.

**5.1.1 Self-sequencing configurations for GRAs.** In most implementations of UpKeep, rooms are algorithmically assigned and enforced. The room list can also be programmed to reveal only one assignment at a time, prohibiting GRAs from seeing their full list of assignments in advance. However, at Hotel WCM, union representatives worked to ensure that GRAs have the ability to organize their room assignments, a right which is now also guaranteed by their union contract.<sup>4</sup> UpKeep does not currently support self-sequencing directly. WCM achieves this by assigning all rooms the same priority points, allowing workers to choose the order in which they clean. At this hotel, the union contract permitted housekeepers to re-prioritize tasks or disregard the recommended sequence entirely. As a result, workers could repeatedly select "come back later" until they reached the room they preferred to clean. Without this contractual flexibility, workers would be required to follow the sequence dictated by UpKeep. While the AM system itself operates the same as in other settings, the union contract allowed workers to bypass the sequencing imposed by the device. Under self-sequencing, experienced GRAs are better able to respond to guest requests, plan their routes, and stage more difficult cleaning assignments.

While our interviews revealed how GRAs used self-sequencing to their benefit, they also expressed additional preferences outside the app's workflow. When researchers asked if GRAs sometimes clean multiple rooms first and mark several rooms as "complete" later, rather than logging each room immediately after cleaning it, they laughed and said "Yes." When asked if their supervisors tell them to not do it, they again said "Yes," and that their supervisors reprimand them when they do not enter information into UpKeep for rooms "one by one." GRAs felt that the entering information in the device took up precious time, and their work would be more efficient by only entering information every few rooms. Another GRA explained that managers rely on an accurate room record when serving hotel guests who may be waiting on those rooms. Supervisors, enforcing the "one-by-one" input policy, negotiate GRAs' autonomy to choose their tasks with the requirement that GRAs document their progress precisely to ensure fast turnaround for guests.

**5.1.2 Manual dispatch configurations.** As GRAs move through their room assignments, supervisors and dispatchers use a manual dispatch system to ensure a smooth workflow for GRAs. The manual dispatch system allows supervisors and dispatchers to vet and distribute additional tasks that arise throughout the workday individually to one of the workers, rather than allowing the system to automatically dispatch the tasks (as is common in most hotels). Our fieldwork revealed how dispatchers use their relational knowledge to make assignments:

*Dana, the housekeeping dispatcher, was eating soup at her desk while she worked. When [two researchers] entered she exclaimed, "Oh you again!," laughing, and said that she had a rush of calls about*

<sup>3</sup>All names that appear here are pseudonyms, and bear no resemblance to our participants' real names.

<sup>4</sup>Accordingly, self-sequencing has since become a salient point in union negotiations with hotel properties across the country.

*15 minutes ago. We watched Dana moving between several sets of software and hardware, including UpKeep, the radio, and the phone, and several other systems that helped in managing housekeeping tasks. She was replacing rooms for which the guest indicated they did not want service, do-not-disturb rooms (DNDs), with new rooms from a list of 33 unassigned rooms and addressing service requests. Dana consistently applied knowledge of GRAs' seniority, sections, and the hotel space to the allocation of room assignments. She showed us a list of housekeepers with their sections, but she said it confuses her more and she doesn't use it. She said "I know their names and I know their sections," because "I do this everyday. I should know, right?"*

*As the DND reporting came in, Dana was speedily assigning unassigned rooms to each housekeeper, also keeping a balance of remaining rooms to clean against the number of housekeepers still to report in DND statuses. As Dana worked, she was counting credits<sup>5</sup> in her head. She knew all 38 working GRAs by voice, remembering each one's seniority. During this time, one of the housekeepers who had been assigned additional rooms while we were there, called again reporting that one of the newly assigned rooms was also a DND. As Dana offered another room number we could hear the housekeeper running down the hall to that room to check if it was a DND. We could hear the footsteps running back and forth several times, as three of the offered rooms were also DNDs. At the same time, Dana was also flipping to the Service Request screen so that she can quickly manually assign guest requests to the appropriate person (urgent requests are largely for amenity refills). The phone was ringing constantly while we were there, a total of 6 calls from other housekeepers reporting their DND rooms and requesting additional room assignments.*

The dedication and expertise of dispatchers like Dana are remarkable, showing how dispatchers rely on their hard-earned understanding of workers' preferences, strengths, and workloads to assign tasks. However, manually monitoring workers' assignments in UpKeep presents a distinct cognitive load. It is easy to imagine how an AM like UpKeep in the hands of a less experienced dispatcher might lead to challenging work assignments. In addition, we observed that the dispatcher at WCM had only one computer monitor for a multitude of tabs and screens across various systems. This increased the difficulty of a manual system, making it more likely for a dispatcher to overlook an assignment and create operational lag for GRAs and housemen. There were several complaints that the dispatching process took a long time, and that the GRAs felt their requests were being ignored.

## 5.2 Managerial visibility

While the manner in which the UpKeep system was used at Hotel WCM gave greater autonomy to workers than most other AMs [36], the tool also featured more traditional managerial visibility functions.

**5.2.1 Investigating assignments.** Within WCM's fast-paced environment, supervisors and agents depend on UpKeep to provide

<sup>5</sup>Credits are used to keep track of workload for GRAs, and are negotiated by union contracts. For example, GRAs may be allotted 14 credits a day, with each room cleaned representing approximately 1 credit. However, additional credits are deducted for checkout rooms which have to be turned over to the next guest, cleaning trashed rooms or particularly large suites, or traveling between multiple floors.

managerial visibility into the status of workers, monitoring workers' locations, task updates, and read receipts. On one hand, the AM's ability to document both task requests and their completion provides a transparent account of assignments and enhances accountability for task completion. A front office manager described how UpKeep documentation facilitates what he calls "investigations" into service complaints when a guest requested a room to be feather free:

**Lee, Front Office Manager:** "So we have all of that information in one place to see who, when was it, who put the request in, when was the request completed by. That's a great way to start the investigation instead of us having to go through the physical logs and then hope that it was in there and then follow up with that individual who may be off of work...there's much less room for error."

On the other hand, Lee describes how the task documentation can also exonerate workers from unintentional blame, such as in this case of missing luggage:

**Lee, Front Office Manager:** "[A guest once said] 'So, I put all my bags together. I'm missing one of my suitcases,' right? So I'm like, I find out who it was [in UpKeep], I talk to them, they're like, 'Nope, I put everything in there.' I let the guests know, [and they say] 'Oh, I found that in my trunk.' Perfect. So yeah. Investigation, but that's how [workers] coordinate going up to rooms to remove the bags."

When a guest complaint was escalated, the front office manager referred to the UpKeep system to pinpoint exactly when a bellman had completed the requested service.

**5.2.2 Following up on AM tasks.** Guest complaints are another instance where the interaction with technology can affect GRAs' agency over their work. Marcus, a housekeeping manager, explains that to avoid complaints, workers must complete guest requests within 15 minutes. That timer that starts ticking as soon as a request is converted into an AM task and assigned to an individual worker. When a task goes without a response for 15 minutes, UpKeep is programmed to escalate that task up the chain. For instance, a dispatcher or housekeeping manager might receive a notification that something has not been completed, and if no one picks up the task, the system continues alerting guest services or higher level supervisors. According to Zhen, a guest services agent, the AM generates a status update to show whether a service request has been received and read by the worker:

**Zhen, Guest Services:** "Well, sometimes the issue that we get from our department [is that] the other departments that are supposed to be taking care of it are not responding right away... we're actually the ones who monitor that [to] make sure somebody is picking up that call. If we see that it's not acknowledged, then we start calling the department and say, 'Hey, there's an UpKeep for this. Mm-hmm. It's been 10 minutes, 15 minutes, you know.'"

Under the AM, guest services may take on the relational role of nudging, reminding, and following up with other departments

when there's little feedback across the network. The labor of following up is also performed by the housekeeping manager, Ruby, who copy and pastes the text of her message multiple times over if she doesn't receive a response from GRAs. Often GRAs would say that they didn't hear the message notification, but Ruby said she knew better: "I know what you're doing!"

Ruby was anxious to receive an acknowledgment from a GRA right away, as she would in a face-to-face interaction. Agents and dispatchers draw on a number of systems in addition to UpKeep, such as phones and radios, hotel systems to display occupancy and check ins, and maps of the hotel's physical layout, when trying to reach workers. This redundancy leads to more negotiation of work and may impinge on the agency of workers.

### 5.3 The labor of documentation

Our research reveals that there are many good reasons why guest service agents and housekeeping managers may struggle to receive timely feedback from GRAs via UpKeep. Increased visibility comes at a cost to workers, who must perform additional labor to update their progress and remain responsive within the app.

**5.3.1 Digital labor in a physical job.** Housekeeping is a profession with a great deal of physical labor. GRAs report time pressures to complete their list of rooms, especially when assigned rooms are very messy or a VIP guest arrives early and causes a rush room request. While UpKeep streamlines task assignments, it can also create additional work when repairs need to be documented in the app while GRAs are doing physical work:

**Louisa, GRA:** "So I'm here as a housekeeper and I use my hands all the time. So sometimes it's hard to send a text message about something is wrong in the room and I have to call the office. It's time-consuming. Just, I don't, I mean, I don't work in the [device]. I work physically, um, moving around, not in the [device]. And sometimes it makes it a little complicated and I sometimes I feel frustrated."

The extra time required by GRAs to use the device, from scrolling and navigation to typing in English, was a common complaint. Documenting repairs has always been a long process. Before UpKeep, GRAs would be asked to fill out a three part paper form. However, Louisa's experience clearly reveals why GRAs may avoid using the app in the midst of cleaning tasks, even as dispatchers may wait anxiously for their requests to be confirmed (see Section 4.3.2). By pointing to the physical nature of her work, Louisa describes wanting to avoid laborious digital documentation, as it demands use of hands that are occupied, wet, or gloved.

Researchers similarly observed Dana, the housekeeping dispatcher, tell another GRA to enter her repair item into the system after the GRA had attempted calling. While it may be easier for a GRA to call in the repair, it creates more work for Dana and is not usually permitted. It also creates more room for error, as Dana does not have the details needed to enter the request.

**5.3.2 Consequences of digital breakdowns.** In our research, we heard multiple stories about problems with the UpKeep interface,

wifi and connectivity, and outdated mobile devices, as described in a field note:

*A GRA named Violet explained that she doesn't like that if an item needs additional cleaning, she has to open up UpKeep, press "start room" and scroll until she gets to the item. The items are also not clear in the navigation so she has to find the right items. By the time she finally finds the right item selection, her battery dies. During lunch, she has to recharge it but she only ends up with it half full. She can't bring her personal charger since it is an incompatible device. It dies. She can't report DNDs (do-not-disturb rooms) because her phone's dead. In order to cope with that, she writes all the rooms down on a piece of paper. She has to be able to know where she's at.*

To managers, Violet's reliance on manual methods, such as writing down tasks on paper, might appear as a lack of adherence to the digital system, despite being a pragmatic response to technological challenges. At the same time, these hurdles cut into Violet's break – a crucial moment for GRAs to connect with peers, discuss their experiences of the day, and recharge.

When on-the-ground operations don't align with the AM task record, workers also take proactive steps to resolve these issues themselves:

**Yuki, GRA:** "And then we really need to have [supplies] on hand right away if they really want us to continue doing the right thing. Sometimes it's hard to find a guest request, like, uh, an extra pillow. And I don't have it in the closet. Right. How to look [on the app]? Well, I don't even know where, how to take my time and look on the iPad. Sometimes I just feel frustrated. I just go to the closet and see if I have a pillow. Like, I'm gonna do it on my own. That's time consuming. Sometimes, sometimes it's really hard. But this has been happening for a while."

According to Yuki, the issue is not just that things are hard to find, but that the act of requesting a pillow in UpKeep so that someone else can fulfill the request takes up time and increases her workload. For Yuki, the time-consuming digital allocation process felt more difficult than performing the physical work of finding and delivering the item herself. GRAs will try workarounds like calling their managers or going off to look for supplies on their own, instead of sorting through all of the categories in UpKeep. In some cases, they are able to avoid logging things in the app. In other cases, they are rerouted back to using UpKeep so that supervisors can continue to keep a record of their progress and to accurately managing workload inside the system.

### 5.4 Navigating AM protocols

While UpKeep promises a standardized process for communication and documentation, physical realities do not always match the algorithmic protocol. Here, we present a more fine-grained view of how workers lean into their interpersonal relationships to get work done outside the AM.

**5.4.1 Communication preferences.** In theory, the department is meant to use UpKeep's documentation protocol because it provides an accountability trail for all roles. But while some supervisors attempted to enforce written communication, the GRA and housemen

tended to prefer voice. A housekeeping manager named Roberto explained to our team that he prefers text messaging to the radio, because it can be hard to understand someone with an accent on the radio. An interview with an English-speaking dispatcher similarly indicated that phone or radio calls could be hard to understand from workers whose first language was not English.

As early as 1988, Grudin wrote about the uneven difficulties of using digital communication protocols in an organization [26]. For the sender, it will be much easier to speak than to write into a device. For the receiver, it will be easier to read than to listen. Ironically, the dispatcher confirmed that GRAs with English-language difficulties much preferred speaking over the phone rather than reading messages and entering information in the device. Expressing frustration, one GRA told us that writing in English was not one of the job requirements when she was hired. At least 12 of our GRAs and housemen participants expressed a similar preference for making orders over the phone, radio, or in person. In addition to texting in English, non-native speakers had trouble navigating extensive UpKeep menus and telling buttons apart. While UpKeep attempts to increase departmental coordination, it defaults to privilege the receiver – most often supervisor roles. When the benefits of communication unintentionally skew toward supervisor, workers who have low English-language or digital literacy skills may have trouble using AM protocols.

In reality, many supervisors often maintained their own communication preferences as well:

**Linda, GRA:** “[One supervisor] hates the phone. He messages for everything. [For another supervisor] they call him on everything. He tells everybody, ‘call me, call me, call me.’ He said, I can be messaging on UpKeep while I’m on the phone... But if [GRAs] hit the least little bit of trouble, they’re supposed to call <laughs>”

Communication thus remains interpersonal, with each individual in the department learning how to seek information from others based on a constellation of intimate knowledge. Workers and managers consider: Do we speak the same language? Does this person check their device regularly, or update their assignment status? Does this person prefer phone calls? In a department where technical literacy varies and digital requests stall, synchronous feedback through phone calls, radios, and face-to-face conversations plays a vital role in maintaining workflow. When supervisors allow for it, these workarounds also lessen the hierarchies introduced by receiver-privileged communication by helping workers who struggle with the technology to communicate in their preferred mode.

**5.4.2 Going around the AM to save time.** Managers may also choose to work around UpKeep’s documentation protocols as a labor-saving measure:

*[A housekeeping manager] stated that the process for configuring credits or workload “is different here.” Managers assist with the work, then keep mental tabs of how credits should be changed in the system. They do not bother entering the changes into UpKeep. When asked why, he said that they fix things later when they are doing paperwork. Day to day on the floor, if a housekeeper encounters a room that is trashed, they enter into UpKeep that they need assistance, and a*

*houseman and or a manager come to help clean, but the credits are not changed.*

In this property, a manager describes how they are less likely to update credit counts (for rooms cleaned) in real time, but are very likely to jump in and help GRAs with difficult tasks. One participant who is a manager reiterated several times that managers help the GRAs, doing things like removing trash from a trashed room and prepping a room to be cleaned, when the workload is above normal. Here, the documentation function in the app (which is time-intensive) takes a backseat to the physical presence of managers who are assisting with physical workloads.

## 5.5 Peer coordination

Our data revealed instances of workers describing how AM-based assignments mediated their peer relationships. One example is how workers parse responsibility for digital assignments, including moments of tension when workers don’t agree about how to coordinate and divide labor.

**5.5.1 Who’s responsible for what.** Workload concerns occur against a backdrop of constantly shifting operational needs, often involving new tasks, amenities, and cleaning protocols. Debates about who should take on additional tasks have led supervisors to reconfigure task allocation in UpKeep. For example, when the hotel moved from individual-use soap and shampoo bottles to refillable pump bottles, GRAs facing existing time pressures negotiated for housemen to take on the extra labor of refilling bottles. Now, GRAs are responsible for creating a new refill order in UpKeep, and housemen are responsible for completing the algorithmically enforced assignment. While the refill task was re-allocated from GRAs to housemen as a result of ongoing intradepartmental conversations, individual workers may feel it is harder to push back against digital assignments, particularly when they are non-routine.

Sometimes workers receive UpKeep requests for tasks which they feel have not been clearly delineated between roles. When the need to file a maintenance request arises, it is not always clear to workers why something is broken, and thus which department would be contacted for the corresponding maintenance request. For example, a GRA may not know why a lamp is not working. Is it a lightbulb which can be replaced by a houseman, or a broken fixture which requires a maintenance worker? Workers in different departments may debate assignments they feel are not in their purview, such as when a group of housemen started discussing what items need to go to utilities instead.

A utilities agent told us that “mis-assignments” often happen because a GRA may have unintentionally assigned a task to the wrong person. Translation barriers can add to this discrepancy. We noted one GRA telling us that she did not read English well, so she memorized that the third box on her screen is for the lamp, while the fourth was for the TV, etc. Down the chain, this can lead to inaccurate maintenance requests. Another GRA admitted that she sometimes makes a wrong order in UpKeep, and her coworkers come to fix things in the room before she has a chance to correct the mistake.

Unlike traditional face-to-face delegation, digital assignments lack the immediate context or relational negotiation that might clarify these mistakes. To correct discrepancies, workers must navigate additional layers of communication, often using informal channels like talking among themselves in the break room and comparing notes. In the best cases, this process is congenial, but it can also lead to interpersonal tensions as workers negotiate who should handle the work.

**5.5.2 Assigning tasks to others.** If digital assignments feel harder to question than in person requests, this is especially true when peers must resolve external workload disputes in UpKeep. We describe the experience of one GRA, who reported on an issue she had with a houseman that day:

**Yuki, GRA:** “I saw him in the cafeteria and I asked him, ‘I didn’t see you the whole day...’ And he came to pick up a microwave in one of the rooms and my floor, but he didn’t take the one in the hallway in the back landing.”

Yuki elaborates on negotiating workload with a houseman, a man with whom she has a prior working relationship. GRAs and housemen ordinarily work closely to coordinate service. GRAs at this property report that housemen help them finish hard assignments, such as trashed rooms, and that teamwork is very important. Now, Yuki addressed the houseman face-to-face in the cafeteria, asking why he didn’t help bring down a microwave that was lent to one of her rooms:

**Yuki, GRA:** “Because you don’t leave [the microwave], you don’t take it [downstairs]? The whole week is gonna be there. Cause you don’t leave it, you don’t take it. So what, did I have to make a UpKeep for that? I mean that I need to use my time. It’s just like some people don’t do their job. It’s hard. It’s hard.”

Yuki first attempted to negotiate the issue face-to-face, but was left feeling unresolved, saying “some people don’t do their job.” Even though Yuki assumed that returning the microwave is the responsibility of the houseman, she was frustrated at the thought that she should have to make a UpKeep ticket for it. A close reading of her interview reveals a few reasons why UpKeep seemed like the wrong solution to escalate or codify the request. There is no menu item for her request, so it would have to be written in, something she saw as a waste of her finite time. If the request is not responded to, the system will notify the supervisor, which is not necessarily representative of the close-knit teamwork between GRAs and housemen that other participants described. The participant speaks to how it feels to make indirect digital requests to a houseman she is sitting in the cafeteria with, her testimony implying that she already feels a lack of support from this coworker.

## 6 Discussion

Working relationships are at the heart of the hospitality industry, where teamwork and mutual support are essential for delivering seamless guest experiences and navigating unpredictable challenges. However, the introduction of algorithmic management (AM) technologies has begun to reshape these relationships. In

this study, we examine how AM influences the interpersonal dynamics between workers, highlighting both the opportunities and challenges it brings to the collaborative nature of hospitality work. Specifically, we demonstrate how UpKeep’s blend of human and algorithmic inputs shape social processes within the workplace. Through an analysis of worker interactions with UpKeep, we highlight the consistent trade-offs between these inputs, revealing how they influence task coordination, peer support, and power dynamics within the department.

Our data reveal how algorithmic control alters existing workflows and may create new power imbalances across roles, especially for individuals who are less facile with the technology. We observed these imbalances even though WCM’s implementation of UpKeep allowed for more adaptable use than a typical AM system. These adaptations took the form of self-sequencing configurations, manual dispatching, human presence across multiple communication channels, and a more flexible approach toward documentation. Building on these adaptations, we provide conjecture around future adaptations that go beyond WCM’s “better” configurations: design opportunities for workplace technologies that thoughtfully negotiate between algorithmic and human inputs to support relational work at Hotel WCM.

### 6.1 Supporting dispatching relationships

At Hotel WCM, human inputs in the form of self-sequencing and manual dispatch configurations help to shape the algorithmic system. However, it would be inaccurate to understand these as technical affordances, resulting from the app. UpKeep does not support self-sequencing as a formal algorithmic feature. What appears as self-sequencing is actually a tacit workaround enabled by the union contract at this hotel and carried out by humans. Tasks are algorithmically enforced, but manually vetted by workers and dispatchers who work in close relationship. Workers are effectively allowed to bypass the system’s sequencing logic and choose the order in which they clean. In other words, the flexibility granted by the labor contract enables a level of autonomy that the system itself does not inherently support. This low-tech solution is the result of nuanced union negotiation, in which rather than strictly banning the tool, the union designed relational rules around which aspects of UpKeep may be enforced by management.

Management still enforces other elements of UpKeep’s algorithmic control. For example, supervisors require workers to complete high-priority VIP rooms as they are assigned, and to enter room statuses into the system one by one as they clean, rather than batching updates later (Section 4.1.1). These examples show how algorithmic systems, which appear impartial and automated, depend significantly on relational dynamics and power structures between workers and supervisors. Managers’ enforcement of certain rules reinforces the algorithm’s control, while the union agreement mitigates others, creating a complex interplay of negotiated flexibility within the workplace.

Similarly, manual dispatching allows more human agency in the system, which strengthens relational coordination, but has a potential to slow down work due to natural human error. Dana, an exemplary dispatcher, balanced operational context with each GRA’s preferences, workload, seniority, and communication needs.

What made Dana's approach stand out was her reliance on relational knowledge. She built trust by listening to workers and adjusting assignments to match real-time challenges, a practice that reintroduces autonomy and trust into the workflow. Dana's capacity for connective labor is not only vital in day-to-day operations, but contributes to the hotel's ability to achieve guest satisfaction. The interplay between algorithmic and manual control reveals how both the self-sequencing and manual dispatch systems ultimately rely on relational knowledge to function effectively in our context. The interactions that result from manual dispatch not only ensure tasks are balanced, but also build rapport as dispatchers provide context for challenging assignments and negotiate schedule changes directly. It is not hard to imagine how Dana's work could become unwieldy when multiple people are involved in making changes, such as in properties where the front desk might also be the authority to designate a "rush" room, or in a larger hotel where she cannot feasibly maintain all the necessary relational information in her head.

To make the room assignment system more robust, a next step could be to sundown systems whose functions are duplicated by newer systems, and to provide Dana and her team with a second monitor. Small usability fixes such as these can go a long way in facilitating the important relational work, but are often overlooked during the integration of more sophisticated AM tools. Future versions of self-sequencing and manual configurations could also be explored to support the relationships between GRAs and housekeeping managers. For example, human-AI collaboration could be leveraged to personalize assignments to GRA preferences, in addition to letting GRAs reorder their rooms in the system. Another potential configuration could benefit housekeeping managers by pre-loading initial task assignments and providing quick reminders for preferences and requests that may have gone unnoticed. Managers could also benefit from visualizations of individual workloads, such as the number of checkout rooms assigned per GRA. These reminders and visualizations could help rectify workload imbalances and keep worker preferences at the front of managers' minds. For example, a dashboard might highlight workers likely nearing high levels of fatigue or those with lighter schedules, assisting dispatchers when applying their own expertise to redistribute tasks more fairly. We note that UpKeep is in the midst of a rollout of a newer version that improves the dashboard for dispatchers.

## 6.2 Supporting flexible workarounds

Managers rely on algorithmic documentation to track task assignments, monitor completion times, and ensure accountability. These data can also be used to address guest complaints and evaluate worker performance. For example, in our study, a supervisor used UpKeep documentation to exonerate a bellman accused of losing a guest's luggage. However, we observed limitations in the algorithmic documentation that led workers to revert to verbal processes or informal practices when they could not accurately represent their experiences in the digital record. These practices can include the utilization of paper records, or a phone call to inform supervisors directly about an issue (Section 4.3.2). These workarounds reveal tensions between the system's design and the realities of

a relational workplace in which the end user's digital and English literacies may not be at a native level. Certainly, increased digital training and translation options may help to bridge some surface-level issues [56]. However, the persistence of these informal practices suggests a gap in the system's ability to adapt to realities on the ground, beyond what light-touch UX improvements could accomplish.

We see both workers and managers pivot around gaps in algorithmic documentation in complex ways, providing critical evidence of how users override the AM with human input to smooth workflow. At WCM, coordination happens without documentation when managers jump in to help workers with difficult rooms (Section 4.4.2) or default to phone calls to reduce the time GRAs would spend on creating a digital work order (Section 4.3.1). Within the system, supervisors are the ones that have a formal role that allows them to do this, while workers often rely on informal strategies to work around formal technological processes.

Sociologist Alison Pugh highlights the ways in which connective labor relies on this form of adaptability, as workers often bend the rules to meet situational needs. Incorporating consistent worker feedback into the system could highlight the areas where human autonomy consistently enhances efficiency. Self-sequencing is a clear example of human input that improves operations. Worker feedback could reveal additional configurations where human input could complement or adjust the functionality of the AM. By making workers' adaptive expertise visible and valued within the system, AMs can move beyond simply optimizing tasks for organizational goals and begin to support the situational decision-making that underpins effective teamwork. On the organizational level, there are opportunities to extend the union's playbook on relational rather than technical enforcement, such as in the case of self-sequencing. For example, by continuing to develop strong technology contracts, unions can ensure that housekeeping managers develop training around the inevitable need for human overrides, rather than perceiving these actions as insubordination. At the same time, there may also be opportunities for workers to actively benefit from the existing uses of digital documentation. Workers may use technologies of accountability to prove their own work record in instances of mismanagement or guest complaints.

## 6.3 Supporting workload sharing

UpKeep is a tool for distributing long-existing housekeeping tasks; other than the need to interact with the AM itself, it does not result in the creation of new tasks. As a result, assignment sharing, which once happened face-to-face or synchronously via phone or radio has now become a digital, asynchronous process. The absence of this personal touch can reduce opportunities for workers to communicate or feel understood, or to collaborate or feel valued. This change is significant because the relational aspects of task-sharing – kindness, flexibility, and context – are not just niceties; they are central to maintaining morale and cooperation in a demanding industry like hospitality.

We observed many ways in which workers ask for help or outsource tasks to their peers in UpKeep. Some of this work is formalized and routine, like when GRAs make assistance calls for housemen or supervisors to help with trashed rooms, or create

maintenance requests for broken fixtures (Section 4.5.1). Other work occurs around non-routine, unexpected tasks, and is less clear in terms of responsibility. For example housemen expressed in interviews that they worried about receiving tasks that belonged to the maintenance department (Section 4.5.1). This resulted in both interpersonal tensions, and the fact that assignments seemed non-negotiable.

We also saw evidence that workers worry about the implications of digitally assigning non-routine tasks to others. This insight builds on our previous research, which showed that workers are reluctant to create extra work for their peers [56]. At WCM, we observed Yuki, a GRA, avoid assigning work in the AM to a houseman that she saw in person. Even though Yuki felt the houseman was responsible for the issue of the microwave, she attempted to coordinate with him face-to-face rather than document the assignment inside the AM. Ultimately, she was frustrated that she had to resort to digital documentation when face-to-face communication resulted in an unsatisfying outcome; perhaps documenting this struggle in UpKeep would feel like tattling, which would further erode a working relationship. This suggests that the very practice of digitally assigning work between co-workers introduces new levels of surveillance. If a worker is required to account for all their time but has no way to document tasks that aren't in the system, it could lead to reduced autonomy and diminished trust between management and workers.

While UpKeep focuses on individual workflows, it lacks mechanisms to recognize or document collective contributions. For example, while UpKeep includes features that give managers visibility into workers' task lists, this manuscript workers don't always have insight into their managers' or peers' workloads. Future technologies could bridge this gap by visualizing collective progress, enabling workers in different roles to see how their efforts align with team objectives. Systems could document factors like task urgency, worker proximity, skillsets, and workload distribution to help workers understand how assignments are allocated without holding any one individual to account. For instance, workplace tools could show housemen how a queued non-routine task they take on will help support GRAs, or vice versa. To prevent requirements for additional screen time or app complexity, there are ample opportunities for rethinking how assignment context is currently displayed. Lastly, it would be important to guard peer-driven visibility features against a culture of speed ups; in an understaffed context, it may encourage workers to push themselves to work harder and faster.

Workplace technologies like UpKeep have the potential to support the working relationships that are vital to hospitality. At WCM, the relatively flexible implementation of algorithmic management demonstrates a configuration that avoids some of the more exploitative practices associated with traditional AM systems, such as rigid surveillance or punitive productivity tracking. However, technologies optimized primarily for operational goals — such as returning rooms quickly and boosting hotel profits — are not designed to account for the needs and contributions of workers across roles. We also acknowledge that the implementation of an AM like UpKeep in a traditional workplace faces many challenges, not all of which are technological in nature. Digital and English-language competency, training, and organizational dynamics may play a role as

well. Some issues that appear as a UX concern may also be a training or English fluency concern. We encourage for future design research to prioritize workers' experiences across these various dimensions, developing workplace systems that can strengthen the human connections at the core of hospitality.

## 7 Conclusion

This paper presents a set of interviews and observations at a mid-sized West Coast hotel, examining the impact of an algorithmic management tool, UpKeep, on working relationships within the housekeeping department. Our findings show that algorithmic management can hinder communication and coordination between roles, especially when the system only accounts for individual rather than collective efforts. UpKeep's relatively flexible configurations—such as self-sequencing, manual task dispatching, managerial involvement across communication channels, and a less rigid approach to documentation—offer a distinct perspective. Despite these advantages, UpKeep still falls short in accounting for the human inputs essential to sustaining collaborative peer relationships. We argue that AM systems should go beyond task optimization to actively support the social and relational dimensions of work, particularly in industries like hospitality, where peer collaboration is vital to service quality and worker satisfaction. Finally, we identify design opportunities for AMs to be accountable not only to organizational goals but also to the dynamics of the workers who rely on them.

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