

RephraseAI: Bridging Communication Gaps in Remote Work Environments

Gokul Kanna Ramesh

Otto-von-Guericke University, Magdeburg

Department of Computer Science

gokul.ramesh@st.ovgu.de

Keywords: Remote work, Computer-mediated communication, Intercultural communication, Politeness, NLP, Workplace AI

Abstract: Remote and hybrid work depend on text-first channels (e.g., Slack, Teams, email). While efficient, these media strip away paralinguistic cues, increasing ambiguity in tone, critique, and intent. Intercultural factors further modulate how the same English sentence is perceived, amplifying misunderstandings. We present **Rephrase.AI**, an implementation-focused system that operates *in English* to (i) detect vagueness, harshness, and ambiguity as users compose messages, (ii) propose culturally aware rewrites grounded in organizational context (deadlines, roles), and (iii) adapt suggestions to intercultural preferences drawn from Erin Meyer’s Culture Map (communicating, evaluating, persuading, disagreeing, trusting). Our contribution is *not* to solve “communication” broadly, but to bound and improve *text-based English workplace messaging* via real-time NLP, culture-aware conditioning, and enterprise integration.

1 INTRODUCTION

Digital platforms have largely replaced in-person meetings and phone calls as the primary means of communication in many IT organizations. Nowhere is this shift more visible than in IT and software teams, where tools such as Slack, Microsoft Teams, and email are the backbone of daily collaboration Brewer and Holmes 2016. These platforms keep distributed teams connected, allow instant sharing of updates, and make it possible to coordinate across time zones. While they bring flexibility and speed, they also come with new risks. Without tone of voice or body language, even short, everyday messages can be misinterpreted. A blunt reminder may be read as pressure, while an attempt at efficiency may appear vague or dismissive. Over time, such misreadings can frustrate colleagues, strain trust, and reduce productivity Van Zoonen et al. 2022.

The challenge is even greater in multicultural IT teams, where members differ in how they expect requests, feedback, or disagreement to be phrased. As Meyer’s Culture Map framework highlights, some cultures value direct and explicit communication, while others rely on subtlety, shared context, and relationship cues Meyer 2014. As a result, the same English sentence can land very differently across read-

ers. What feels efficient to one person may sound abrupt or confusing to another.

This paper focuses on the kinds of everyday English messages in workplace tools where these gaps most often arise. Three issues are especially common: (i) **vague or overly brief messages** that leave room for misunderstanding or feel pressuring, (ii) **harsh or overly direct wording** in critiques and task requests, and (iii) **missing context** such as deadlines or responsibilities that force extra clarification. Prior work on subtle workplace toxicity shows that much of the harm in text is not overt hostility but implicit tone and context, which underlines the need for proactive guidance rather than reactive moderation Bhat et al. 2021.

We introduce **Rephrase.AI**, an assistive system designed for IT organizations that use digital platforms as their main collaboration space. The tool works inside Slack or Teams, detecting risks in clarity and tone as users type and suggesting alternatives. It combines three elements: classifiers that flag vague, blunt, or potentially harsh drafts; lightweight integration with project context to suggest missing details; and culture-aware guidance that adapts to team preferences on explicitness, feedback style, persuasion order, and disagreement. Importantly, the system is assistive—users stay in control of how to phrase their

message. By embedding intercultural awareness into everyday text composition, Rephrase.AI aims to reduce misunderstandings, strengthen trust, and make distributed IT collaboration smoother.

2 Problem Statement

Remote collaboration in IT and software teams depends largely on text-based communication using platforms such as Slack, Microsoft Teams, and email. While these tools enable coordination across distributed teams, they also introduce risks in how messages are interpreted. Short or blunt requests can be seen as pressuring, vague instructions often lead to confusion about what needs to be done, and overly direct feedback can harm trust between colleagues. Prior studies confirm that these issues increase stress levels, create extra work, and weaken team effectiveness in digital environments (Van Zoonen et al., 2022; Steffensen et al., 2021). Many organizations already invest in communication training programs and courses, but such initiatives have not eliminated these challenges in daily practice.

The challenge is intensified in multicultural teams. As Meyer (2014) explains in the *Culture Map*, communication styles vary widely across countries. In some cultures, effective communication is expected to be precise, simple, and explicit, while in others it is more nuanced, layered, and dependent on shared context. This means that the same message may appear clear and efficient to one person, but abrupt or incomplete to another, depending on their cultural background. These mismatches are especially visible in multicultural IT teams where members interpret text through different norms.

Current tools provide little support for this problem. Writing assistants mainly focus on grammar or surface-level politeness, while toxicity detection systems are designed to identify overtly offensive language. These approaches do not address the subtle but frequent tone issues found in workplace messages, and they rarely adapt to organizational context such as deadlines or task ownership.

The problem this paper addresses How can IT professionals be supported in writing messages that are clearer, respectful, and culturally sensitive, using real-time AI-powered rephrasing integrated into digital collaboration platforms?

3 Related works

3.1 Miscommunication in Remote teams

Prior research on communication in distributed teams identifies several recurring challenges. Brewer and Holmes (2016) show that vague terms and shorthand create different interpretations within teams, leading to delays and errors. The “Dark Side of Virtual Office” study extends this by linking low information richness and lack of social presence in virtual settings to reduced job satisfaction and weaker commitment. Complementing this, broader analyses of workplace barriers emphasize how language gaps, cultural norms, and physical separation multiply misunderstandings and harm productivity.

Together, these works point to a shared challenge: everyday digital messages often lack clarity, tone, and context, especially in distributed teams. Existing remedies, such as awareness exercises or training programs, raise awareness but are limited in reach and sustainability. What remains missing is continuous, real-time support embedded in the very tools where communication happens.

3.2 Subtle toxicity in Workplace Communication

Workplace messages are not only affected by overtly hostile language but also by more subtle forms of toxicity such as sarcasm, stereotyping, or negative gossip. These indirect signals are harder to identify automatically, yet they still harm trust, lower morale, and reduce cooperation in teams. The ToxiScope study (Bhat et al., 2021) introduced a taxonomy for workplace communication and showed that implicit categories like gossip and impolite remarks are frequent in professional emails. It also demonstrated that context, such as previous messages in a thread, is important for detecting such tone. Still, subtle categories remain difficult to classify, and there are risks of bias or false positives if systems are used for strict moderation. This underlines the need for supportive tools that help employees notice potentially unclear or harsh wording as they compose messages, instead of relying only on after-the-fact detection.

3.3 Intercultural communication in digital teams

Cultural norms strongly shape how the same English message is read in distributed teams. Meyer’s *Culture Map* (2014) shows that while some cultures value

direct and explicit phrasing, others prefer indirect or high-context styles where meaning is carried through shared understanding. This gap is visible in virtual exchange studies, where Finnish and American students struggled with differences in communication style, responsiveness, and motivation (Mäkelä et al., 2020). The findings highlight that short or blunt text often feels “cold,” and trust requires time for informal sharing and clearer context.

Large-scale analysis of remote work further adds that while flexible arrangements increase satisfaction, they can also heighten stress and isolation if cultural and social differences are not managed (Bahrain et al., 2023). Machine learning models can predict some of these outcomes, but they cannot fully capture the nuances of intercultural communication. Together, this evidence underlines the need for assistive tools that help writers adapt tone and clarity in real time, reducing misinterpretation in multicultural IT teams.

3.4 AI for writing and collaboration

Recent surveys of AI in remote collaboration show how tools such as chatbots, virtual assistants, and workflow automation can streamline daily work, from scheduling to transcription and translation (Zhou et al., 2021). These systems improve efficiency and reduce costs, but they remain broad and general-purpose, with limited focus on the subtleties of workplace communication. Ethical debates on privacy and bias dominate much of this discussion, yet there is little evidence of tools that help employees adjust tone, clarity, or intercultural nuances in real time.

Studies on collaborative AI also highlight its potential when human and machine inputs are combined. Experiments show that AI can improve the quality of tasks like writing and analysis, particularly when matched to the right context (Sundararajan and Kim, 2022). However, results vary by task complexity, and human oversight remains essential. For our case, these insights suggest that instead of fully automated moderation, an AI assistant embedded in Slack or Teams should act as a partner—providing context-aware rephrasing and intercultural adjustments while leaving the final choice with the writer.

4 Implementation