Enhancing Scalable Mentorship through Generative AI: A Mobile Platform for Asynchronous, Personalized Engagement

Mentorship is a cornerstone of academic and professional growth, offering mentees personalized guidance, skill development, and access to industry knowledge. However, traditional mentorship programs often face scalability challenges when extended to large groups, making it difficult to maintain meaningful interactions and personalized engagement. This problem is particularly pressing in education and professional development contexts, where the demand for mentorship far exceeds the supply of mentors. Existing solutions for scaling mentorship, such as large group workshops or online forums, frequently sacrifice depth and interpersonal connection in favor of accessibility.

To address this gap, prior work introduced Compass, a chat-based platform designed to enable large-scale synchronous mentorship by utilizing multi-person conversational units. In real-world deployments involving over 30 students and industry mentors over a 10-week period, Compass demonstrated its ability to increase student engagement and improve mentorship experiences. Despite these successes, challenges remained in fostering strong interpersonal connections and providing flexibility for mentees with varying schedules and needs. Asynchronous communication, a critical feature for accommodating diverse participants, was limited in the previous version of Compass, constraining its potential for broader impact.

Building on this foundation, we present an enhanced version of Compass that incorporates generative AI within an asynchronous mobile application. This approach seeks to address the limitations of previous iterations by enabling mentors to manage large groups more effectively while allowing mentees to engage on their own schedules. Generative AI-powered

features such as automated content generation, clustering of participant responses, and conversation summarization are central to this update. These tools not only reduce the load on mentors but also facilitate more structured and meaningful interactions within large mentorship cohorts.

This work draws on and extends insights from prior research on scalable mentorship platforms and AI-driven educational tools. Studies on the use of AI in education (Seo et al., 2021) highlight the potential for machine learning systems to enhance student engagement and streamline administrative tasks for educators. Research on AI-supported online learning environments (Zawacki-Richter et al., 2019) further underscores the importance of balancing automation with human involvement to preserve mentorship quality. By integrating these innovations into Compass, we aim to demonstrate how generative AI can transform mentorship programs, addressing long-standing challenges of scalability, engagement, and flexibility.

In this paper, we detail the design and implementation of the enhanced Compass platform, evaluate its impact through a real-world deployment involving 50+ participants, and discuss the implications of using generative AI for large-scale mentorship. The results indicate improved participant engagement, reduced response times, and increased satisfaction, highlighting the potential of this approach to redefine mentorship in education and beyond. This study contributes to the growing body of literature on scalable mentorship solutions and underscores the transformative role of AI in educational technology.