

Chapter 14

Intelligence Augmentation via Human–AI Symbiosis: Formulating Wise Systems for a Metasociety

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ABSTRACT

Intelligence augmentation (IA) facilitates a new systems perspective to frame the value outcome of the interaction between human and AI agents. The factors that can optimize this collaborative integration of the multi-agent system are investigated and discussed. Different kinds of knowledge approaches are met in various contexts to create an optimized IA system in service settings. In this respect, AI agents are not just tools but rather co-creators of value that can influence human agents' learning cycles. Hence, humans' effective interaction with AI agents produces a learning effect that can empower humans' interpretative capability. This chapter focuses on IA and shows that IA is not only a theoretical paradigm but also serves as a platform to facilitate the transition from smart services to wise service innovation to the benefit of both the multi-agent system benefitting service organizations and the consumers too. Potential challenges are also discussed from a societal viewpoint.

1. INTRODUCTION

The paradigm of Intelligence Augmentation (IA) facilitates a new systems perspective to frame the value outcome of the interaction between human and AI agents. The factors that can optimize this collaborative integration of the multi-agent system are investigated and discussed in detail. The different service-learning experiential cycles of a) human agents (service employees) and consumers, and b) AI agents, respectively, may develop concurrently, to form a synergistic systems service cycle (Barile & Polese, 2010; Stylos, 2020).

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Different kinds of knowledge approaches are met in various contexts to create an optimized IA system in service settings. In this respect, AI agents are not just tools but rather co-creators of value that can influence human agents' learning cycles. Hence, humans' effective interaction with AI agents produces a learning effect that can empower humans' interpretative capability, i.e. an IA effect (Barile et al., 2021; Markauskaite et al., 2022). Therefore, the mutual learning effects between humans and AI agents can develop co-creative services that are based on priorities set by both humans and AI agents.

With a focus on combining the strengths of human and machine or artificial intelligence, IA has the possibility to fundamentally change the role that technology plays in our work and life (Zhou et al., 2021). The significant advancement and accessibility of AI technologies and related technology infrastructure has made the present a historical moment for IA. As IA enters our daily lives and workplace, it creates tremendous opportunities to observe how humans interact with IA, which will provide ample evidence and help researchers and scientists develop new theories to explain and guide efforts to cultivate human-machine synergy for human goods, improve enabling technologies, and even prepare and train the future workforce (Maddikunta et al., 2022). The relationship between humans and machines will likely change as technology evolves. Ultimately, IA supports the creation of value for humans, be it business outcomes, cognition enhancement, or innovations. Thus, as a research field, IA has strong real-world relevance and requires a multidisciplinary perspective that considers goals, human factors/context, effective and efficient technologies, the ways in which humans and technologies interact, governance structures, and environmental constraints and their feedback (Dwivedi et al., 2021; Goodell & Craig, 2022).

Objectives

This chapter has two objectives. First, it seeks to clarify aspects of IA, and properly position it across the spectrum of collaboration between the animate and inanimate agents. Second, it discusses the transition from a smart to wise service systems by utilizing Industry 4.0 technologies in conjunction to human intelligence to form superior intelligent interactions in Society 5.0.

Contributions

First, it provides an account of different types of IA and shows that IA is not only a theoretical paradigm but also serves as a platform to facilitate the transition from smart services to wise service innovation (Kamboj & Gupta, 2020; Sarmah et al. 2018) to the benefit of both the multi-agent system (Humans and AI agents) representing the service organizations and the consumers. Second, the factors that can optimize this collaborative integration of the multi-agent system are investigated and discussed in detail. Potential challenges and benefits are also discussed from a societal viewpoint, particularly in the context of metasociety.

Organization

The structure of the rest of the current chapter is summarized as follows. Section 2 offers an introduction to human-machine symbiotic relationship. Section 3 exemplifies various types of IA in a multi-agent system perspective in a human-AI symbiotic context. Then, the transition from Smart service to Wise service systems is explained in Section 4, including practical examples. Finally, Section 5 offers conclusions to provide an overview of this work, as well as the challenges that set the way forward.

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