IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

DigiU – Human Digital Twins

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Abstract: *The increasing demand for realistic digital presence across professional and social domains has resulted in the emergence of Human Digital Twins. Current communication and AI assistants enhance productivity but lack personalization, contextual behavior, and emotional resemblance to the user. This paper presents DigiU, an AI-driven framework designed to construct Human Digital Twins by learning from multimodal user data such as text, voice, and behavioral patterns. The system employs a two-tier architecture consisting of a Parent Model and multiple Child Models. The Parent Model captures linguistic style, personality traits, and domain knowledge using fine-tuned Large Language Models (LLMs) through LoRA-based adaptation. Child Models derived from the parent replicate the user's communication tone, decision reasoning, and natural conversational behavior in real time. Experimental observations indicate that DigiU can generate personality-aligned responses, demonstrating its potential in remote collaboration, educational mentorship, emotional assistance, and long-term identity preservation.*

Keywords: Artificial Intelligence, Digital Twin, Child Model, Human Representation, LoRA, Parent Model

DOI: 10.48175/IJARSCT-30361