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A Conceptual Model of Digital Twin for Potential Applications in Healthcare

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Abstract

Digital Twin (DT) is one of the important enabling technologies for Smart Manufacturing and Industry 4.0, with a huge potential for many impactful applications in healthcare and industries. This paper presents a conceptual model of a DT system, with a proof-of-concept (POC) prototype of a robot for demonstrations and further investigations of DT applications in telehealth and in-home healthcare. The successfully developed POC prototype were tested to evaluate time delay, and possible errors when operating and controlling the virtual and physical models of a robot. The proposed conceptual model of a DT system can be used for demonstrations about DT, with further developments for potential applications in healthcare and industries, especially when it is integrated with emerging technologies such as artificial intelligence, machine learning, big data analytics, smart sensors, augmented reality and virtual reality.

Keywords

- **Digital Twin**
- **Industry 4.0**
- **Human-robot Interaction**
- **ROS**
- **Unity**

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