

Human Digital Twin for Personal Conversation Automation Using Supervised Machine Learning Approaches

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Abstract : Digital Twin is an emerging research topic that attracted researchers in the last decade. It is used in many fields, such as smart manufacturing and smart healthcare because it saves time and money. It is usually related to other technologies such as Data Mining, Artificial Intelligence, and Machine Learning. However, Human digital twin (HDT), in specific, is still a novel idea that still needs to prove its feasibility. HDT expands the idea of Digital Twin to human beings, which are living beings and different from the inanimate physical entities. The goal of this research was to create a Human digital twin that is responsible for real-time human replies automation by simulating human behavior. For this reason, clustering, supervised classification, topic extraction, and sentiment analysis were studied in this paper. The feasibility of the HDT for personal replies generation on social messaging applications was proved in this work. The overall accuracy of the proposed approach in this paper was 63% which is a very promising result that can open the way for researchers to expand the idea of HDT. This was achieved by using Random Forest for clustering the question data base and matching new questions. K-nearest neighbor was also applied for sentiment analysis.

Keywords : human digital twin, sentiment analysis, topic extraction, supervised machine learning, unsupervised machine learning, classification, clustering

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