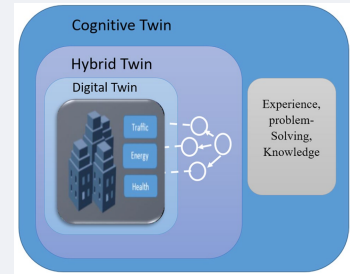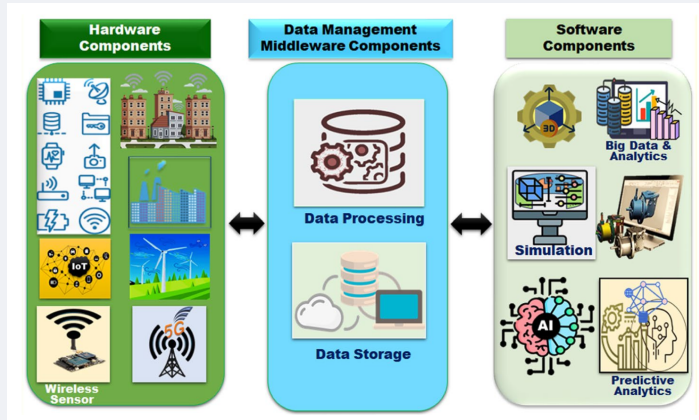# Progress Report

Digital Twin

Umesh Kumar Singh

Research Paper Overview

- Research Paper: **Comprehensive analysis of digital twins in smart cities: a 4200-paper bibliometric study** (https://doi.org/10.1007/s10462-024-10781-8)
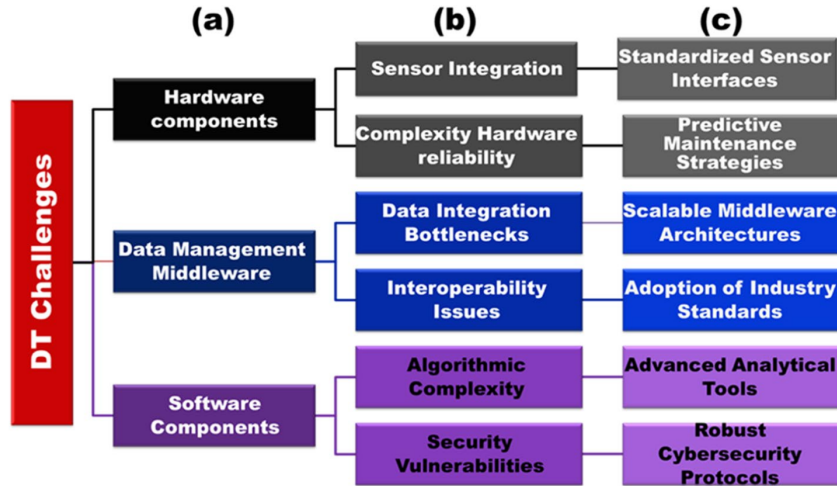
Challenges

Fig. 13 Overview of digital twin components, associated challenges, and proposed solutions. Part (**a**) delineates the core components of a Digital Twin (DT). In part (**b**), a detailed breakdown highlights the challenges inherent in each component. Part (**c**) provides insightful solutions strategically proposed to address these challenges and enhance the effectiveness of Digital Twin implementation

Softwares

- Completed 3 of 6 modules of a course in Unity Essentials
- Created a small car game to understand about the Unity engine and assets customization
- Mini Project: 3D human motion capture using python
  - uses computer vision to capture the human motion and export it into landmarks which is later used in Unity to render the movements of that human object.

Progress target for next 15 days

- 4-7 research papers on Intelligent Transportation System and understand the achitectures and use of AI discussed in those papers.
- Dive deeper into Object Detection
- Modify the 3D motion capture project for Vehicles to simultaneously detect and render in Unity.