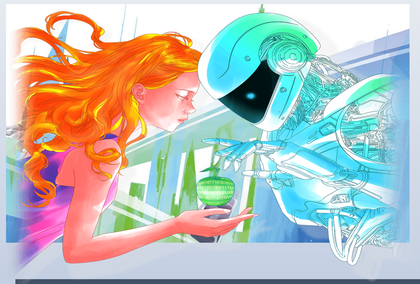


Precision-Driven Digital Twin System for Autonomous Vehicle Validation: Synthesizing High-Fidelity Geospatial and UAV-Derived Data

FORUM8

13th CPWC

Horizon

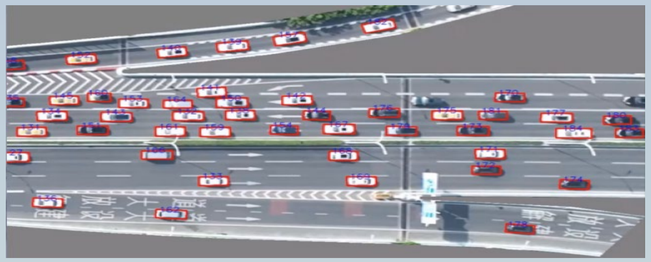
Overview

This research leverages UC-win/Road as a simulation platform, integrating autonomous driving and Human-Machine Interface (HMI) technologies for the development of a digital twin system. High-fidelity Unmanned Aerial Vehicle observation data facilitates realistic traffic flow simulation. Scene fidelity is enhanced by integrating road-specific Building Information Models (BIM) and satellite imagery. Furthermore, autonomous driving plugins enabling networked communication, learning, decision-making, planning, and control were developed, alongside a LUA-scripted HMI system, constituting a next-generation digital twin framework.

Project Background And Goal

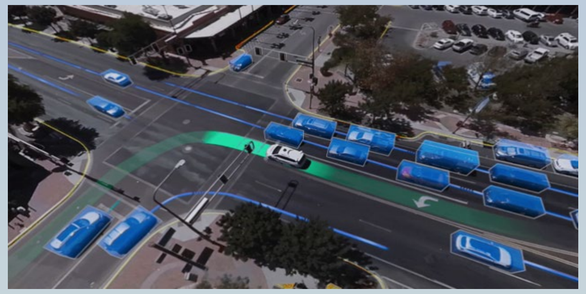
Creating the next-generation digital technology leading to the Web 4.0 era

Autonomous driving requires realistic driving scenario and data



High-precision trajectory data was collected to train and build a realistic scenario

Future Tasks And Ideas



Training autonomous driving models using UAV trajectory data

Upgrading the HMI to provide more information and adapt to more scenarios

System Components