

Federated Learning

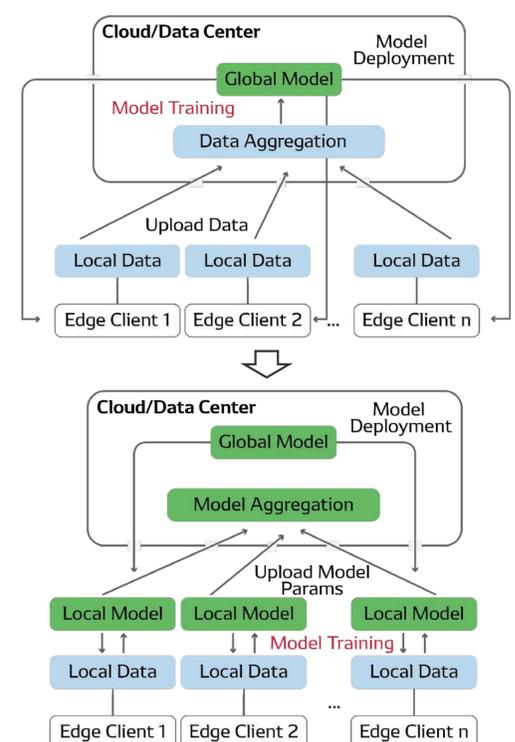
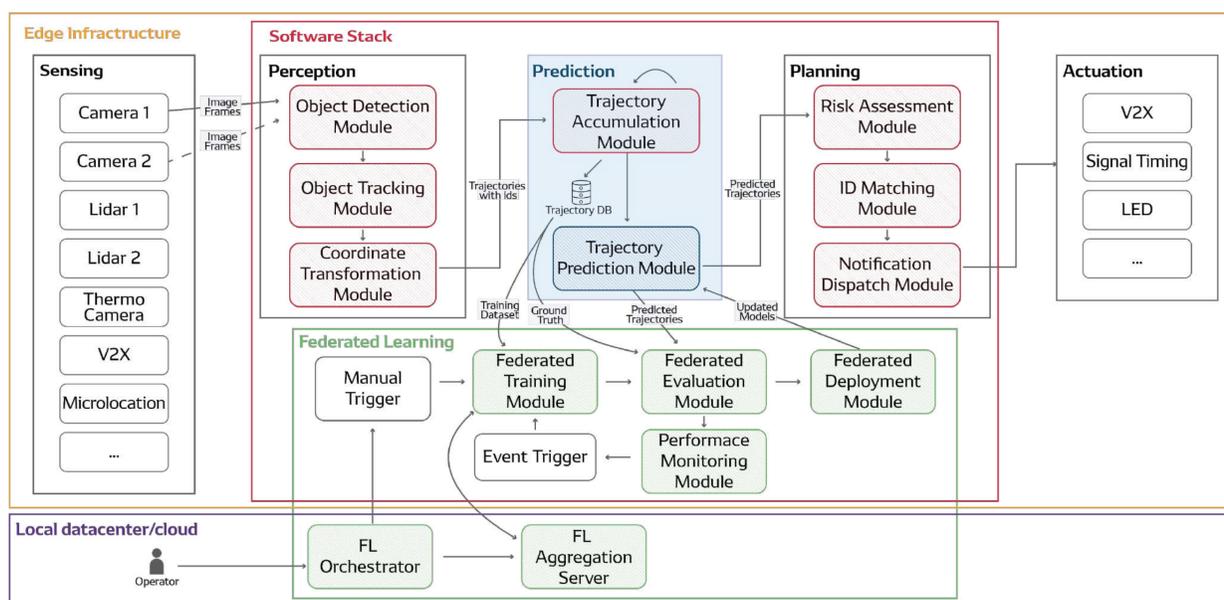
For Protecting Vulnerable Road Users



Highlights

- We partnered with the University of Tennessee at Chattanooga to create a perception-prediction-planning system for roadside infrastructure. Our system uses personalized federated learning (FL) at its heart to deliver better performance, improved privacy, and lower costs.

System Architecture



Testbed

- With its launch in Chattanooga, Tennessee, the Smart City Corridor introduced a powerful network of sensors, computing resources, and wireless technologies. It has since become a hub for cutting-edge Smart City research.

Result

- We evaluated our personalized models using real-world traffic data from four intersections along the Smart City Corridor, showing about a 10% improvement over centralized methods.
- We are developing advanced risk assessment methods to quantify potential collision threats and deliver early warnings to vulnerable road users (VRUs) and connected vehicles through DENSO Roadside Units (RSUs).

