

Category Award Smart City (public service)

Edge-based Pedestrian AI Safety System



ELAN Microelectronics Corp.

義隆電子股份有限公司



Winning Reason

The self-developed edge computing AI image recognition model (YOLOv9) offers high-precision mixed traffic recognition capabilities (vehicles/pedestrians/bicycles). It incorporates pedestrian coordinate projection and vehicle coordinate projection, enabling patented red-light violation prediction or dynamic signal control to extend red lights to reduce pedestrian and vehicle collisions. The model has undergone field tests in Taoyuan and Yunlin, with discussions ongoing for related local government project needs. There is similar demand in Southeast Asian markets, which also have mixed motorcycle and car traffic, with negotiations underway in Thailand, Malaysia, and Vietnam.

Product Feature

Edge-based Pedestrian AI Safety System is the first AI-driven pedestrian signal control solution, combining real-time detection, predictive analytics, and adaptive signals. Through AI image recognition, dynamic trajectory analysis, and braking distance estimation, the system assesses potential safety risks and makes the following decisions:

Real-Time Warnings: Alerts pedestrians and drivers via CMS displays, flashing beacons, and smart ground markings, enhancing situational awareness.

Extended Pedestrian Crossing Time: Extends green light duration when pedestrians require more time to cross safely.

Extended All-Red Phase: Extends the all-red phase upon detecting high-risk red-light violations, mitigating pedestrian-vehicle conflicts.