

The AI Edge: Intelligent Vehicle-Infrastructure Cooperation System(I-VICS)

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I-VICS Introduction

- › Application scope of Intelligent Vehicle-Infrastructure Cooperation System(I-VICS): including airport and station passenger flow grooming system, urban traffic intelligent dispatching system, expressway intelligent dispatching system, operation vehicle dispatching management system, motor vehicle automatic control system, etc. The function of intelligent transportation system: it improves the efficiency of transportation, alleviates traffic congestion, improves the capacity of road network, reduces traffic accidents, reduces energy consumption and environmental pollution through the harmonious and close cooperation of people, vehicles and roads.



Where on the Edge

- › In the aspect of road edge computing, the new road side system (RSU) in the future will integrate a variety of communication methods such as lte-v / 5G, provide a variety of sensor interfaces and local map system, provide signal timing information and surrounding moving target information, and provide vehicle collaborative decision-making and other technologies and capabilities to build a road side edge computing node. The coordinated driving of workshop (V2V) and vehicle road (V2I) can reduce the probability of accidents by means of accident warning and avoidance.



Use case 1: Safety Of The Intended Functionality (SOTIF)

- › SOTIF(ISO/PAS 21448) emphasizes to avoid unreasonable risks due to expected functional performance limitations.
- › The background of the birth of SOTIF is the development of intelligent driving



Use case 1: Safety Of The Intended Functionality (SOTIF)

If classified according to the functional chain of intelligent driving: perception-decision-execution, the "functional performance limitation" is reflected in three aspects:

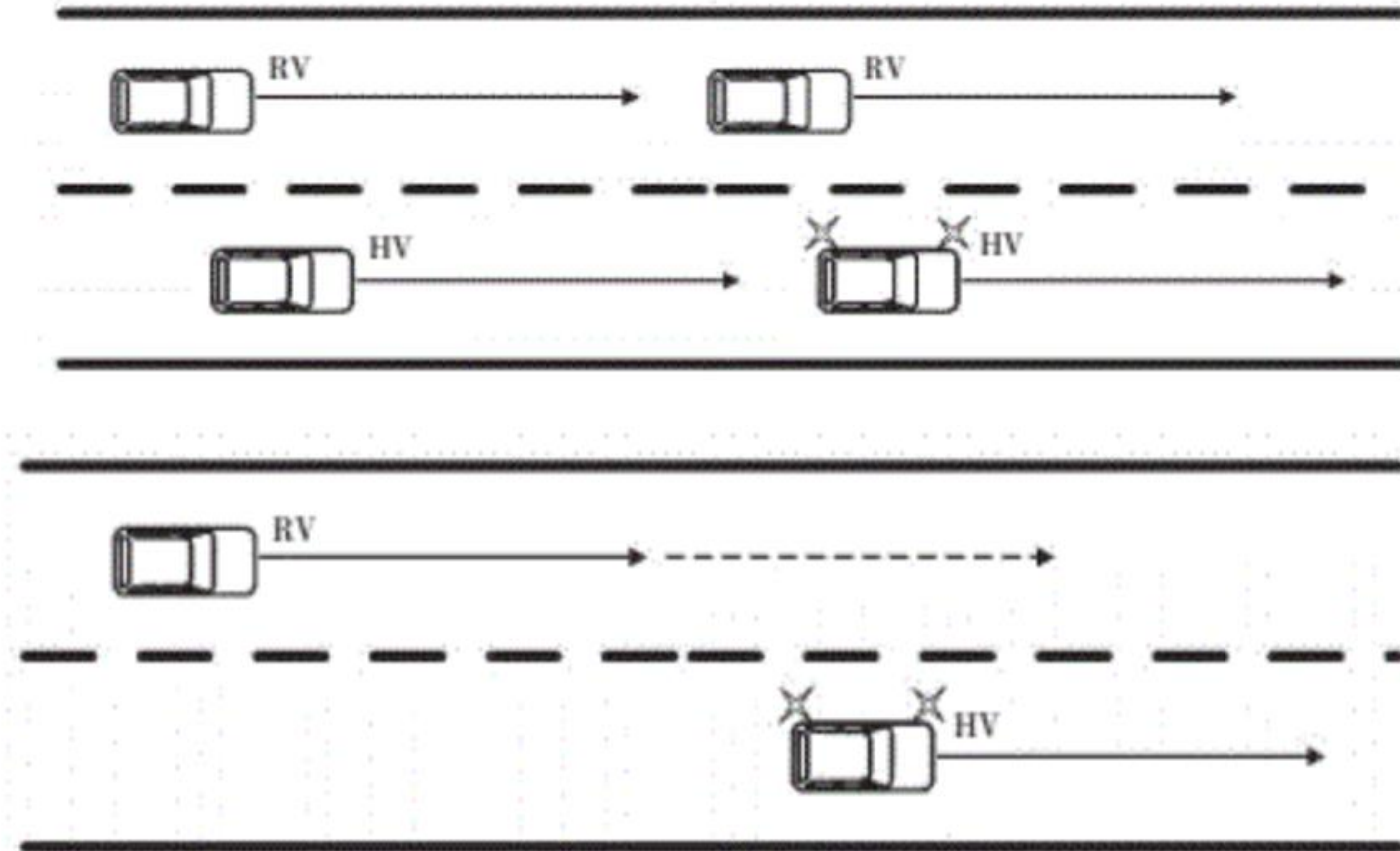
- Sensor perception limitations lead to scene recognition errors (including missed recognition of driver misoperation)
- Insufficient deep learning causes the decision algorithm to judge the scene incorrectly (including the wrong response to the driver's misoperation)
- Actuator function limitations lead to deviation from the ideal target

Use case 2: Cooperative intelligent transportation system

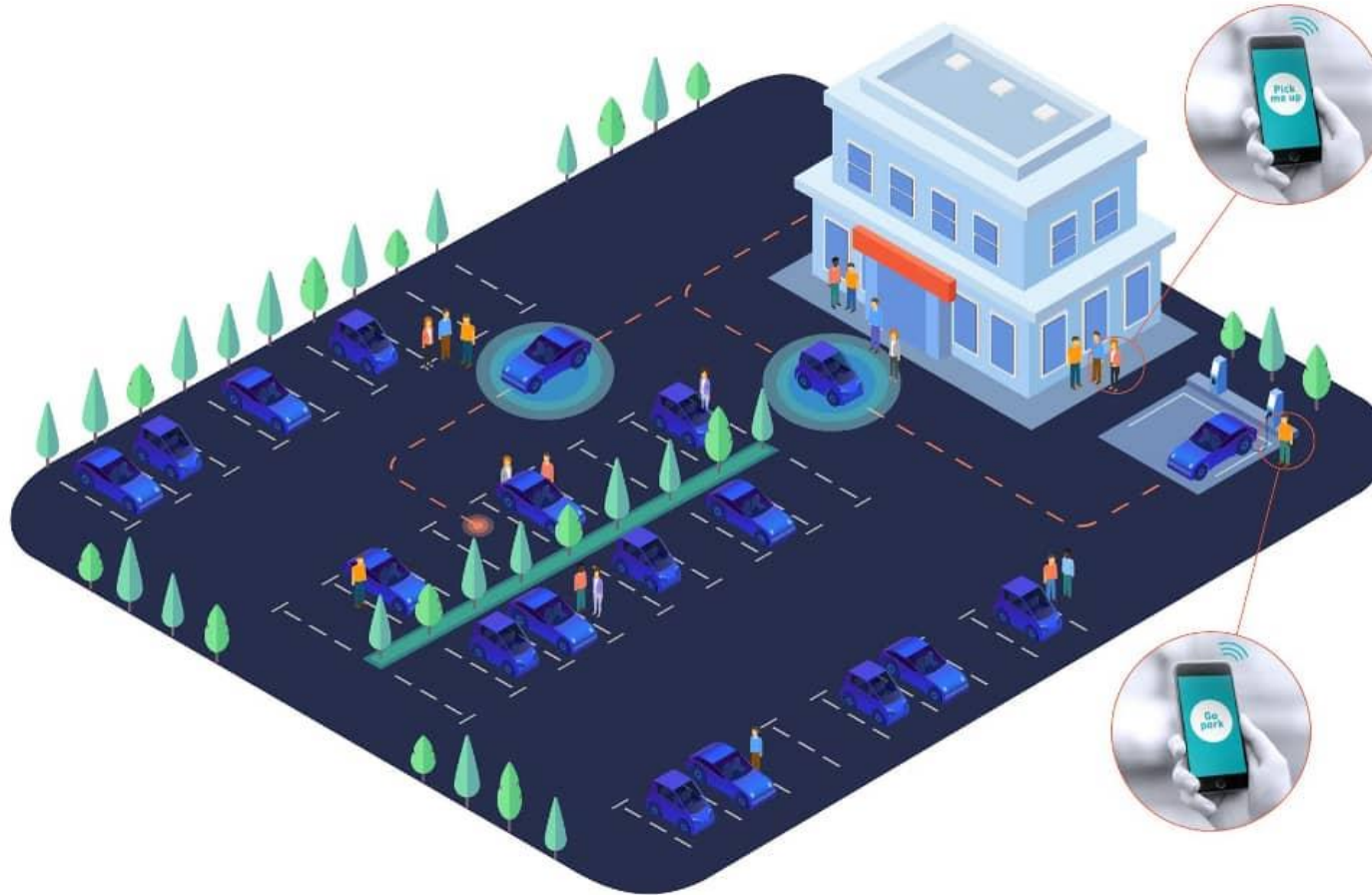
- › Vehicle road collaboration platform integrates sensing, communication, computing, control and other technologies, based on standardized communication protocol, realizes mutual mapping between physical space and information space, including "vehicle, traffic, environment" and other elements, standardized interaction and efficient collaboration, and uses cloud computing big data capabilities to solve systematic resource optimization and configuration problems.

Use case 2: Cooperative intelligent transportation system

› Function example:BSW/LCW



Use case 3: Autonomous Valet Parking



Release 4 Status

I-VICS at Edge BP Architecture Documents:

<https://wiki.akraino.org/display/AK/I-VICS+R4+Architecture+Document>

I-VICS at Edge BP API Documents:

<https://wiki.akraino.org/display/AK/I-VICS+R4+API+Document>

I-VICS at Edge BP Installation Documents:

<https://wiki.akraino.org/display/AK/I-VICS+R4+Installation+Document>

I-VICS at Edge BP Release Notes:

<https://wiki.akraino.org/display/AK/I-VICS+R4+Release+Notes>

I-VICS at Edge BP Test Documents:

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Thank You

