AI for Safe Transportation Use Case - Smart Cities

Statement of Work (SoW)

Overview

Traditionally, a smart city has been defined as a “city that uses information and communications technology to make its critical infrastructure, its components and public services more interactive and efficient, making citizens more aware of them”. In a broader definition, a city can be considered as “smart” when its investment in human and social capital and in communications infrastructure actively promote sustainable economic development and a high quality of life, including the wise management of resources implemented through a participatory government.

“Smart Cities must be considered as systems of people who interact and use flows of energy, materials, services and financing to catalyse sustainable economic development, resilience, and a high quality of life; these flows and interactions are “smart” through the strategic use of ICT infrastructure and services within a transparent urban planning and management process that responds to the social and economic needs of the society” [1].

ITS in Digital Cities

Architecture of ITS

ITS architectures are primarily about data exchange and the control instructions that pass between the different ITS components and the external interfaces (operators, stakeholders and other systems). It needs to reflect the real-world constraints that operate on transport agencies and the requirements these impose on the ITS implementation. Examples are interoperability between the participating agencies and the retention of information control by the respective agencies.

An ITS architecture may show where existing organisational structures need to be modified and changed – perhaps quite radically – in order to deliver the desired ITS services. An example is a traffic control centre (TCC) that may need to exchange data with another TCC or a traveller information centre (TIC), possibly across national or language boundaries. Defining the content and minimum performance specification for this transaction matters a great deal. The ITS architecture enables the performance specification to be defined to achieve the required level of interconnection and interoperability. The choice of which specific technologies are best to use in response is a matter for the system designer.

It is not possible to present a complex system in a way that can convey all the information about the system in an understandable manner. This is reflected in an ITS architecture, where multiple viewpoints, depicting different levels of detail and different types of information are used. These viewpoints might include:

- the logic (or functionality) of the system describing how various items of data should flow and be processed (the “logical” or “functional” viewpoint)
- how the ITS functionality will reside in the physical components of the system (the “physical” viewpoint)
- what communications are needed between the physical components – and between the outside world and the physical components (the “communications” viewpoint)

how the system components, communications and responsibilities are to be assigned to providers and recipients of the ITS services (the “organisational” viewpoint) [4]

Safety Challenges in ITS

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- Driving without awareness and distracted driving. When attention goes down, the chances of a car crash go up.
- Slips and falls.
- Failure to conduct proper walkarounds.
- Other drivers.
- Fatigue.
- Changing conditions.

AI Solution Specifications

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References & Resources

#	Topic	Source
1	Digital Cities in Practice with Real-life examples and patterns	http://www.uclg-digitalcities.org/en/the-committee/digital-cities-in-uclg/
2	A better future transformed by intelligent mobility of ITS America	https://itsa.org/wp-content/uploads/2022/06/ITSA-Mobility-Principles-6.21.22.pdf
3	A Global view on ITS	https://unece.org/transport/intelligent-transport-systems
4	ITS Architecture Premier	https://rno-its.piarc.org/en/systems-and-standards-its-architecture/what-its-architecture
5	AI in Transportation	https://www.v7labs.com/blog/ai-in-transportation
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