GLOSSARY

Advanced driver assistance systems (ADAS)

The precursors of AV technology offered by OEMs today in the form of advanced driver assistance systems (ADAS) such as blind spot monitoring, forward collision warning, lane assist among others.

Algorithm

A sequence of instructions, rules, and calculations executed by a computer in a particular order to yield a result, typically an answer to a specified problem. Algorithms can be used in combination with other algorithms to solve complex problems.[143]

Artificial intelligence

The term "artificial intelligence" is used to describe machines that mimic "cognitive" functions that humans associate with other human minds, such as "learning" and "problem solving".[143]

AV/AVs

Automated vehicle

Autonomous Vehicles Innovation Network (AVIN)

An initiative led by the Ontario Centres of Excellence and funded by the Province of Ontario, AVIN brings together industry and academia to capitalize on the economic opportunities of connected and autonomous vehicles (C/AV), while developing the emerging technology and infrastructure.

Connected vehicle

A vehicle that is capable of safe, interoperable networked wireless communications among vehicles (V2V – Vehicle to Vehicle), the infrastructure (V2I – Vehicle to Infrastructure), (V2X – Vehicle to Other) or passengers' personal communications devices. Examples of communication modes can include Dynamic Short Range Communications (DSRC), Wi-Fi or 5G networks.

Driving automation system

The hardware and software that are collectively capable of performing part or all of the driving task on a sustained basis; this term is used generically to describe any system capable of level 1-5 driving automation.[144]

First mile

First mile is a term used to describe the movement of people and goods from a starting point in a home or business to a transportation hub. See also *Last mile*.

Last mile

Last mile is a term used to describe the movement of people and goods from a transportation hub to a final destination in the home. See also *First mile.*

LiDAR

A detection system which works on the principle of radar but uses light from a laser to measure distances to objects.

Low-income measure, after tax (LIM-AT)

The Low-income measure, after tax, refers to a fixed percentage (50%) of median adjusted after-tax income of private households. The household after-tax income is adjusted by an equivalence scale to take economies of scale into account. This adjustment for different household sizes reflects the fact that a household's needs increase, but at a decreasing rate, as the number of members increases.[145]

Low or Zero-Carbon Energy Sources

Low-carbon or zero-carbon energy sources reduce or eliminate carbon emissions associated with conventional petroleum fuels, such as gasoline and diesel. The most common low-carbon fuels are alternative fuels and cleaner fossil fuels, such as natural gas (CNG and LPG). The main purpose of a low-carbon fuel standard is to decrease carbon dioxide emissions associated with vehicles powered by various types of internal combustion engines while also considering the entire life cycle ("well to wheels"), in order to reduce the carbon footprint of transportation. Zero-emissions vehicles emit no exhaust gas from the onboard source of power, including harmful pollutants such as particulates (soot), hydrocarbons, carbon monoxide, ozone, lead, and various oxides of nitrogen.

Machine learning

Machine learning is the scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task without using explicit instructions, relying on patterns and inference instead. It is seen as a subset of artificial intelligence. Machine learning algorithms build a mathematical model based on sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to perform the task.[143]

Mobility-as-a-Service (MaaS)

Mobility as a Service or Transportation as a Service, describes a shift away from personally owned modes of transportation and towards mobility solutions that are consumed as a service. This is enabled by combining transportation services from public and private transportation providers through a unified gateway that creates and manages the trip, which users can pay for with a single account.

Non-OEM companies

Companies which do not manufacture their own vehicles, but may – for example – modify an existing vehicle by "integrating systems from multiple suppliers and coupling that with their own AV technology stack".

Original Equipment Manufacturer (OEM)

Any company that manufactures parts for use in new vehicles, but often used to describe automobile manufacturers that assemble and market vehicles under their own brand.

Private Transportation Company (PTC)

A Private Transportation Company (PTC), sometimes known as a transportation network company (TNC), mobility service provider (MSP) or ride-hailing service, is a company that matches passengers with drivers (or eventually AVs) via websites and mobile apps.

A PTC is defined in the Toronto Municipal Code Chapter 546, Licensing of Vehicles-For-Hire § 546-1.

Ride-hailing

The act of a hailing a private vehicle for the purposes of securing a transportation services. Usually paid for by a time and/or distance based fee. Excludes: traditional taxis, limousines and public transportation.

See *Private Transportation Company (PTC)*

Ride-sharing

The act of sharing a private vehicle with another known or unknown passenger and sharing the cost of operating the vehicle (such as carpooling).

Shared automated vehicle (AV) fleet

Driverless vehicles (SAE Level 4 or 5) operated as part of an on-demand ride-hailing service

SAE Levels of Driving Automation

The current global standard for indicating the level of driving automation. There are six levels, from zero to five. The higher the level, the more the vehicle is capable of handling the full driving task without human intervention, including monitoring the environment, navigating between destinations, and avoiding collisions.

Travel Demand Model (TDM)

Travel Demand Models (TDM) are computer programs which predict how people use transportation systems. They are used to test the implications of infrastructure (e.g. the addition of a new road or higher-order transit line), policy (e.g. changes to transit service levels or fare policies) or technology (e.g. AVs) changes on future travel patterns. These predictions of future travel patterns are based on projected land use, demographics, and the region's existing travel patterns, through variables such as population, employment, households, current travel behaviour, and more. Outputs can include traffic volumes for various roadway segments, ridership on transit routes, and travel times.

Transportation Network Company (TNC)

See *Private Transportation Company (PTC)*

Unbanked

Unbanked (or financially excluded) refers to those individuals who lack access to some or all mainstream banking services.

Vehicle-to-infrastructure (V2I) communication

In V2I, the infrastructure plays a coordination role by gathering global or local information on traffic and road conditions and then suggesting or imposing certain behaviors on a group of vehicles. One example is ramp metering, already widely used, which requires limited sensors and actuators (measurements of traffic density on a highway and traffic lights on ramps).

Vehicle-to-vehicle (V2V) communication

Vehicle-to-vehicle (V2V) is an automobile technology designed to allow automobiles to "talk" to each other. The systems will use a region of the 5.9 GHz band set aside by the United States Congress in 1999, the unlicensed frequency also used by Wi-Fi. The US V2V standard, commonly known as WAVE ("Wireless Access for Vehicular Environments"), builds upon the lower-level IEEE 802.11p standard.

Vehicle-to-everything (V2X) communication

V2X communication is the passing of information from a vehicle to any entity that may affect the vehicle, and vice versa. It is a vehicular communication system that incorporates other more specific types of communication as V2I (Vehicle-to-Infrastructure), V2V (Vehicle-to-vehicle), V2P (Vehicle-to-Pedestrian), V2D (Vehicle-to-device) and V2G (Vehicle-to-grid).

VKT

Vehicle Kilometres Travelled

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