

March, 2022

YourVoiceMATTERS

What is artificial intelligence

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Not a day goes by without the mention of how artificial intelligence helped in producing more crops with less resources or how it helped thwart a cyberattack on a critical infrastructure. The impression one gets from these articles is that artificial intelligence is one big giant monolithic computer or computer program that solves complex problems.

One cannot be further from the truth.

Artificial intelligence is an umbrella term for a collection of computer programs, or algorithms, used to solve myriad complex unstructured problems.

Structured problems, problems that are well defined, such as entering your current location into GPS followed by your destination and the computer program or algorithm in the GPS uses information on

road networks to get directions from your location to your final destination. That is, the algorithm in the GPS follows a sequence of steps in arriving at a solution.

But, not all problems are well structured. An example of an unstructured problem is the algorithm used to control an autonomous vehicle.

An autonomous vehicle is a driverless vehicle. An autonomous vehicle cannot be trained to deal with every possible situation it will face when driving down the street.

One can program the autonomous vehicle to follow a set of rules and then have artificial intelligence algorithms deal with dynamically changing situations such as pedestrians walking in front of the car or a deer deciding to dive in front of the vehicle. Even if one trained the computer program

to deal with all possible situations, such as pedestrians and the diving deer, one cannot train the autonomous vehicle to deal with a dog that decides to chase a cat and the cat and dog jump in front of the car.

For the autonomous vehicle to safely drive down a street, it needs a large collection of intelligent algorithms such as:

- Pattern recognition algorithms — Processing images obtained by cameras
- Clustering algorithms — Used for detecting objects obtained from the LIDAR radar
- Decision matrix algorithms — Determines if a car should turn left, right or go straight
- Deep learning algorithms — Localization of car maps, perception of sensors and navigation.