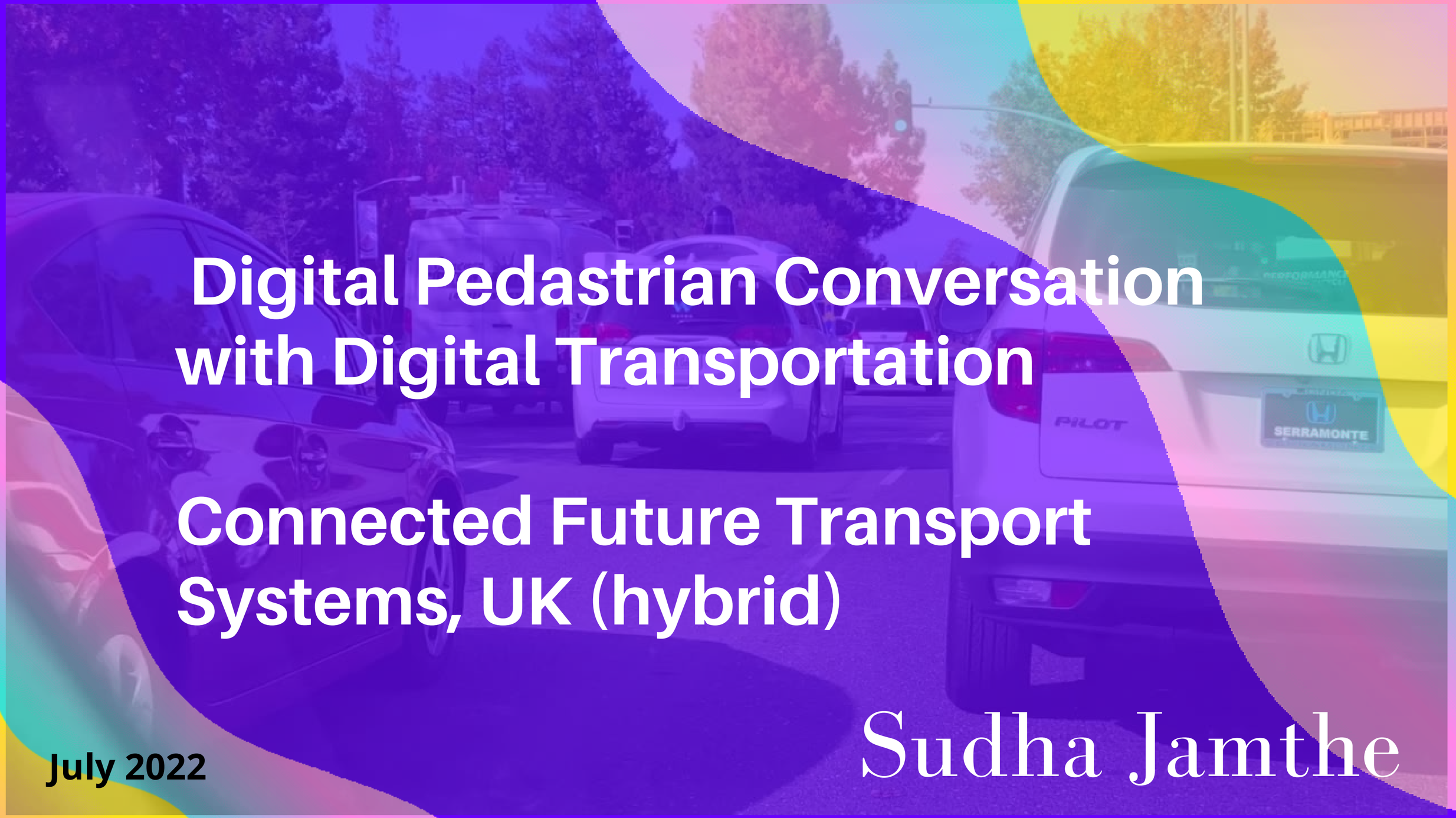
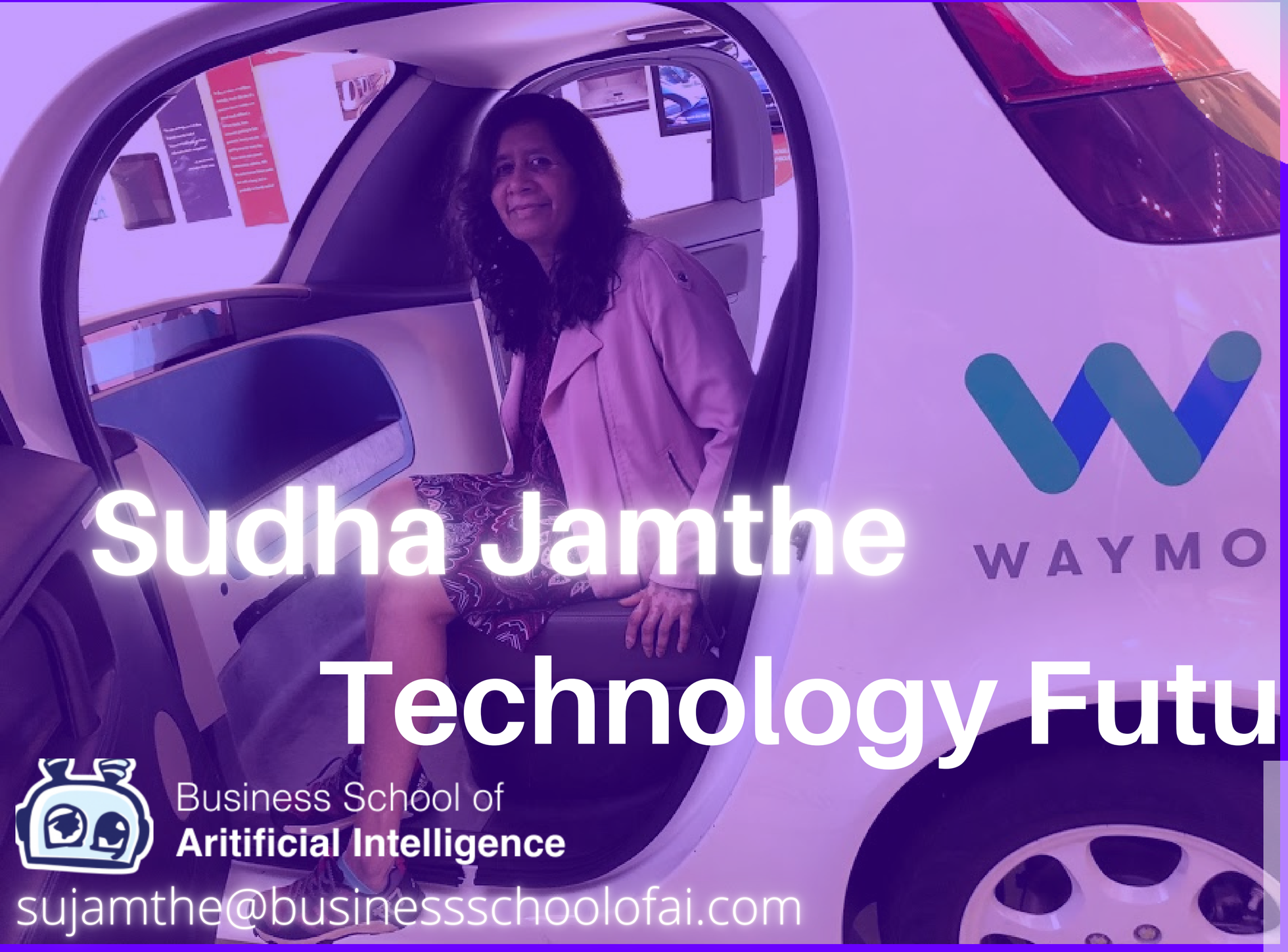


Digital Pedastrian Conversation with Digital Transportation

Connected Future Transport Systems, UK (hybrid)

July 2022

Sudha Jamthe



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GINGKO
FURNITURE

What we will learn today?

1. The Digital Vehicle
2. The Digital Pedastrian
3. V2X and Voice AI
4. Q&A

1. Autonomous Vehicle Technology

WHAT IS AUTONOMOUS VEHICLE BUSINESS

Autonomous Vehicle business is the set of businesses that builds the self-driving car technology stack, offers mobility services with data in the car and new business models that enable smart mobility.

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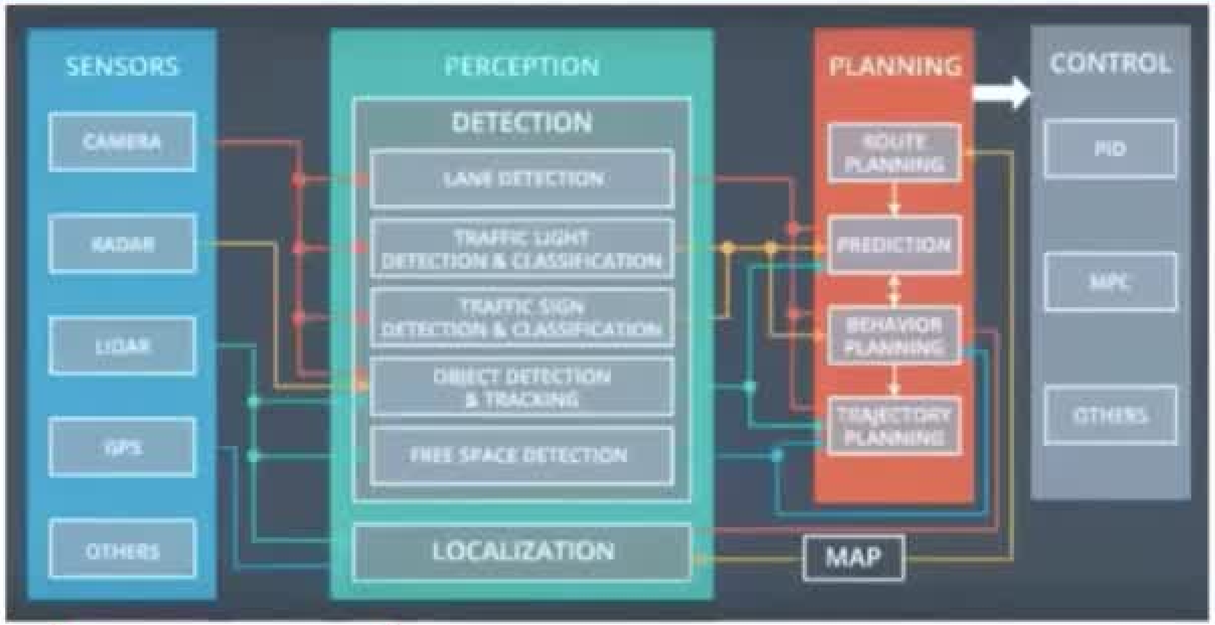
LESSON 1: CARS AS SOFTWARE ON WHEELS



Should this be done as OTA updates or can AI chips on the car make car cognition more intelligent?

Car sensors market $26 billion by 2030.

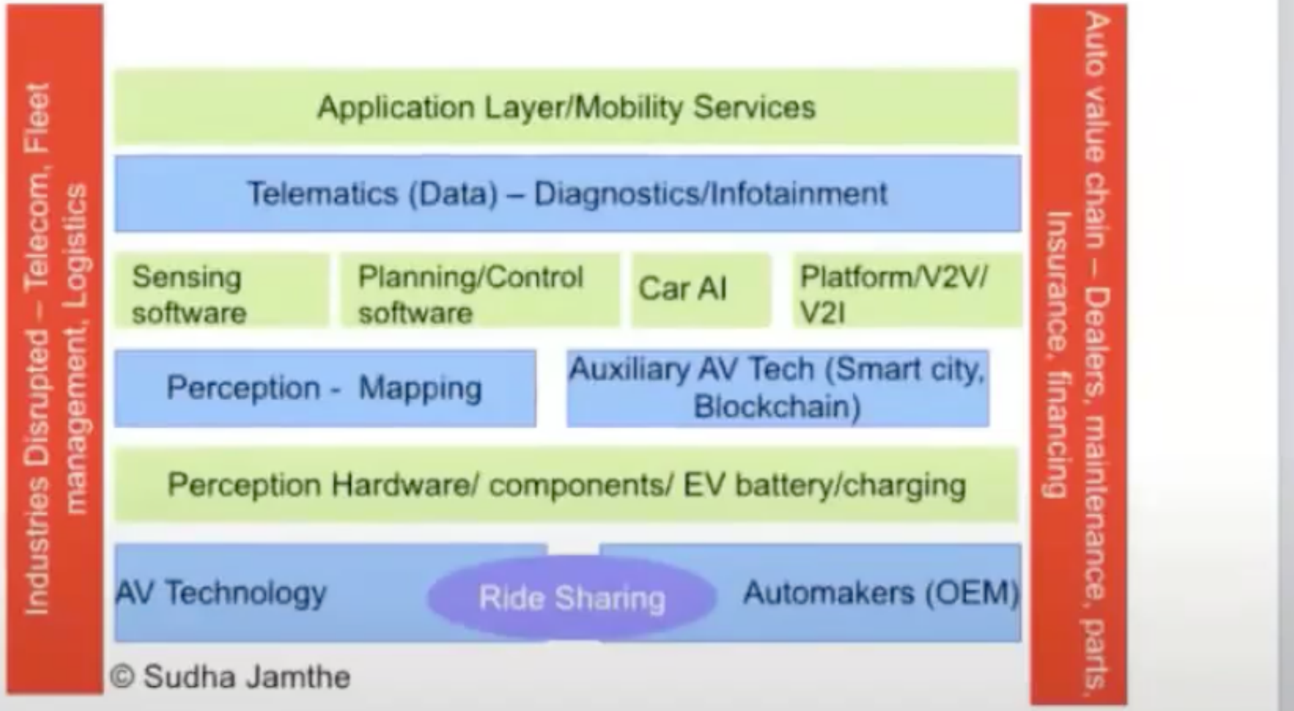
Process video to detect other vehicles. Software to process sensor data into structured information to use for path planning – combine sensor data to information. Detection (understand surrounding) & Localization (sensor and map data). Localization is called as "perception space as a business" Is not taken.

Source: Udacity

IoTDisruptions.com #Driverless @sujamthe

MORE VIDEOS
lay (k)

LESSON 2 : AV TECHNOLOGY STACK & OS IN CARS



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2. The Digital Pedastrian

Pedastrian Intent Prediction

https://stip.stanford.edu/ Video: https://www.youtube.com/watch?v=GnRzgQxKqSA&t=2s

Pedastrian Intent Prediction

PIE: A Large-Scale Dataset and Models for Pedestrian Intention Estimation and Trajectory Prediction

Amir Rasouli*, Iuliia Kotseruba*, Toni Kunic and John K. Tsotsos
York University, Toronto, Ontario, Canada
{aras,yulia_k,tk,tsotsos}@eecs.yorku.ca

Abstract

Pedestrian behavior anticipation is a key challenge in the design of assistive and autonomous driving systems suitable for urban environments. An intelligent system should be able to understand the intentions or underlying motives of pedestrians and to predict their forthcoming actions. To date, only a few public datasets were proposed for the purpose of studying pedestrian behavior prediction in the context of intelligent driving. To this end, we propose a novel large-scale dataset designed for pedestrian intention estimation (PIE). We conducted a large-scale human experi-

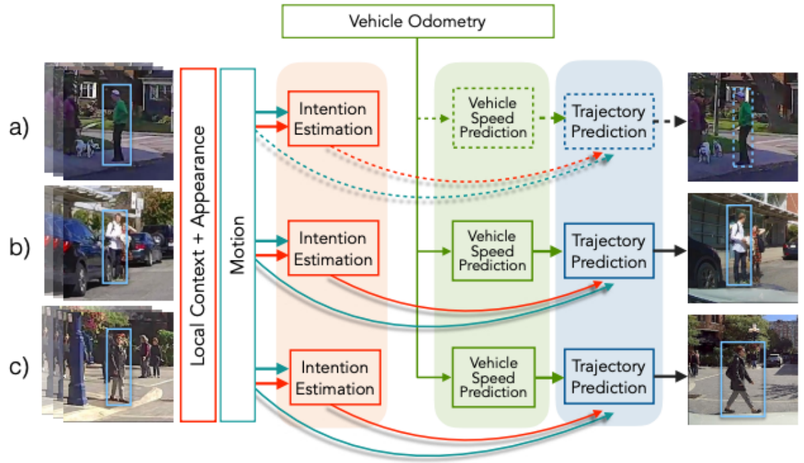
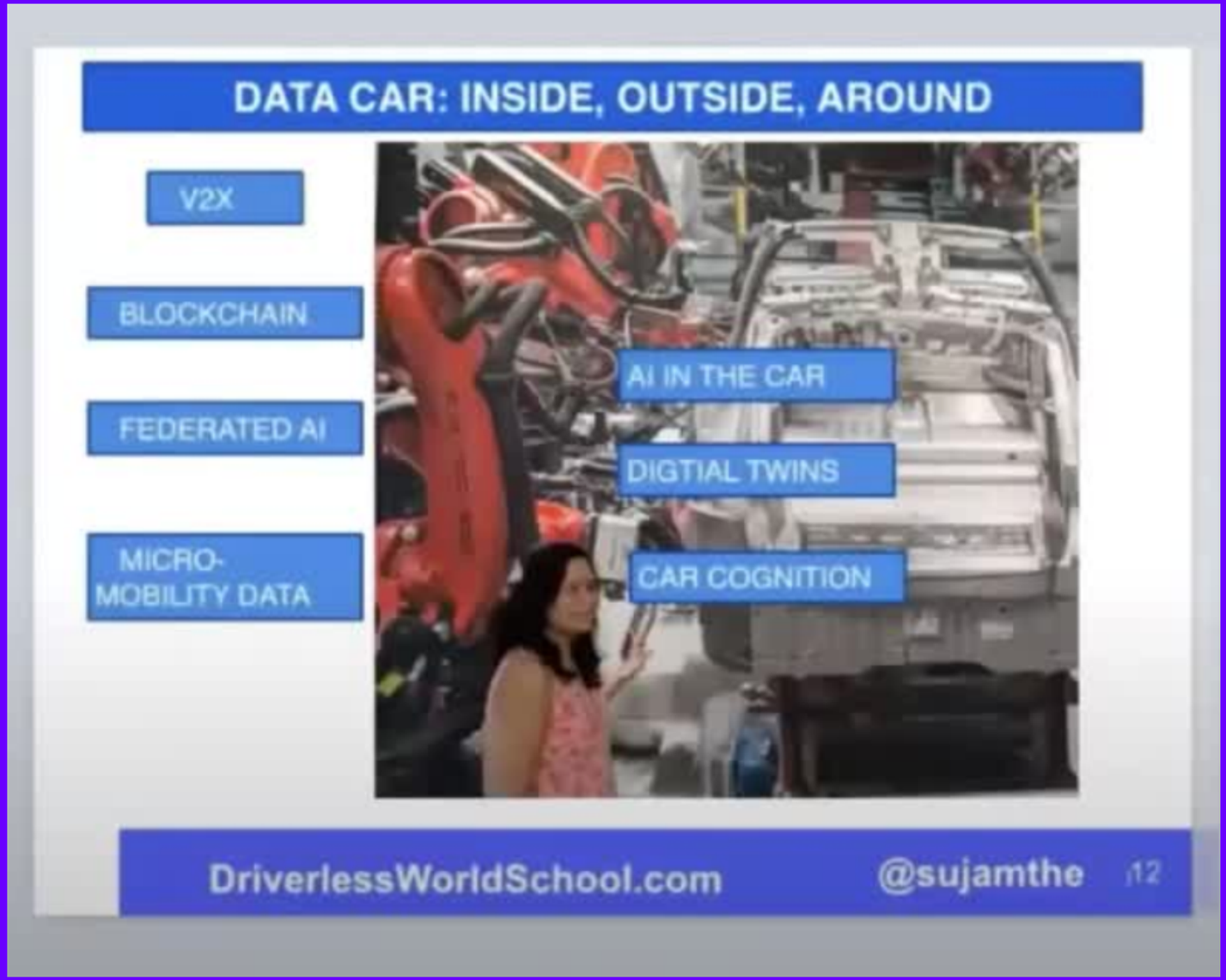


Figure 1. Processing stages for different sources of information

https://openaccess.thecvf.com/content_ICCV_2019/papers/Rasouli_PIE_A_Large-Scale_Dataset_and_Models_for_Pedestrian_Intention_Estimation_ICCV_2019_paper.pdf

AI in the Vehicle



Voice AI in the Vehicle - Infotainment, Navigation

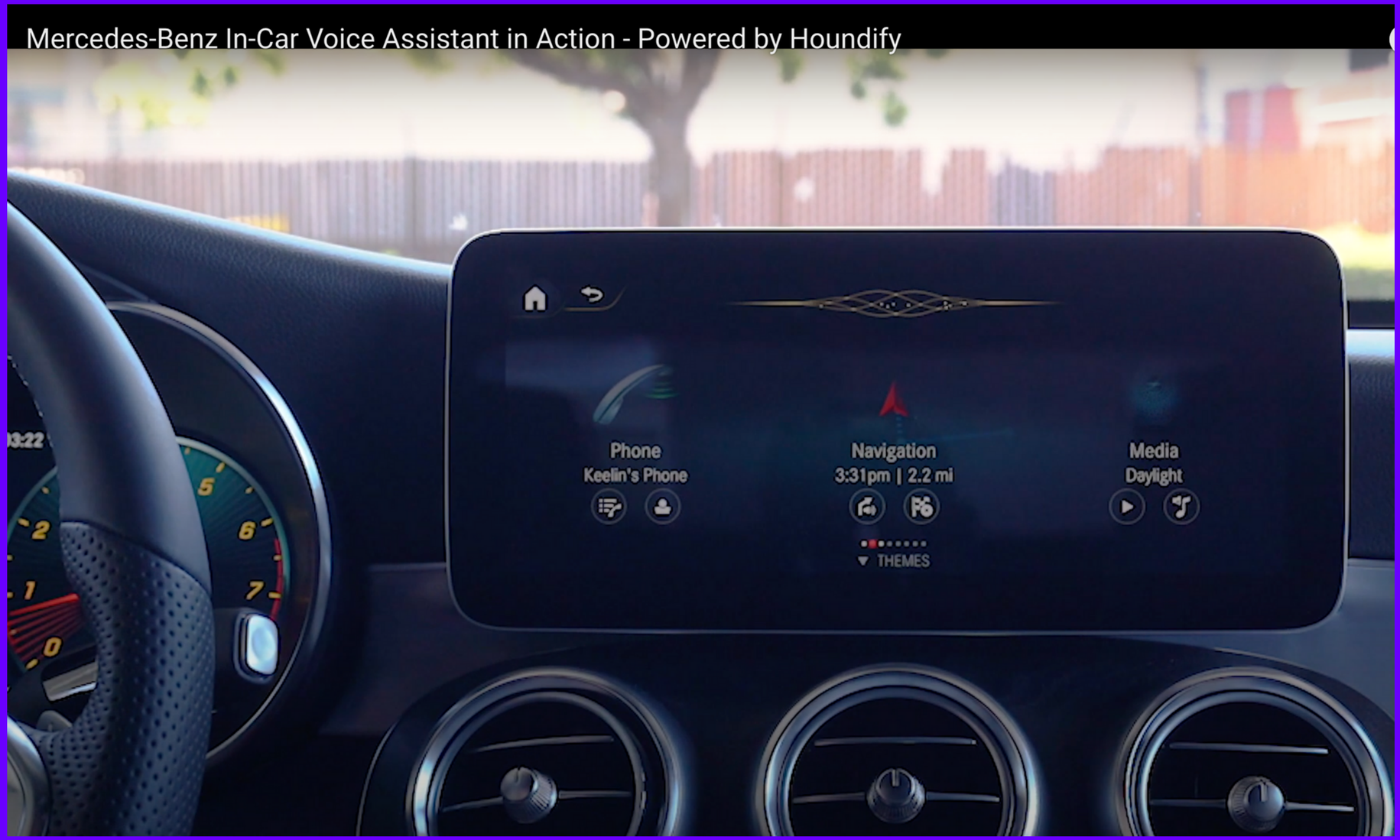
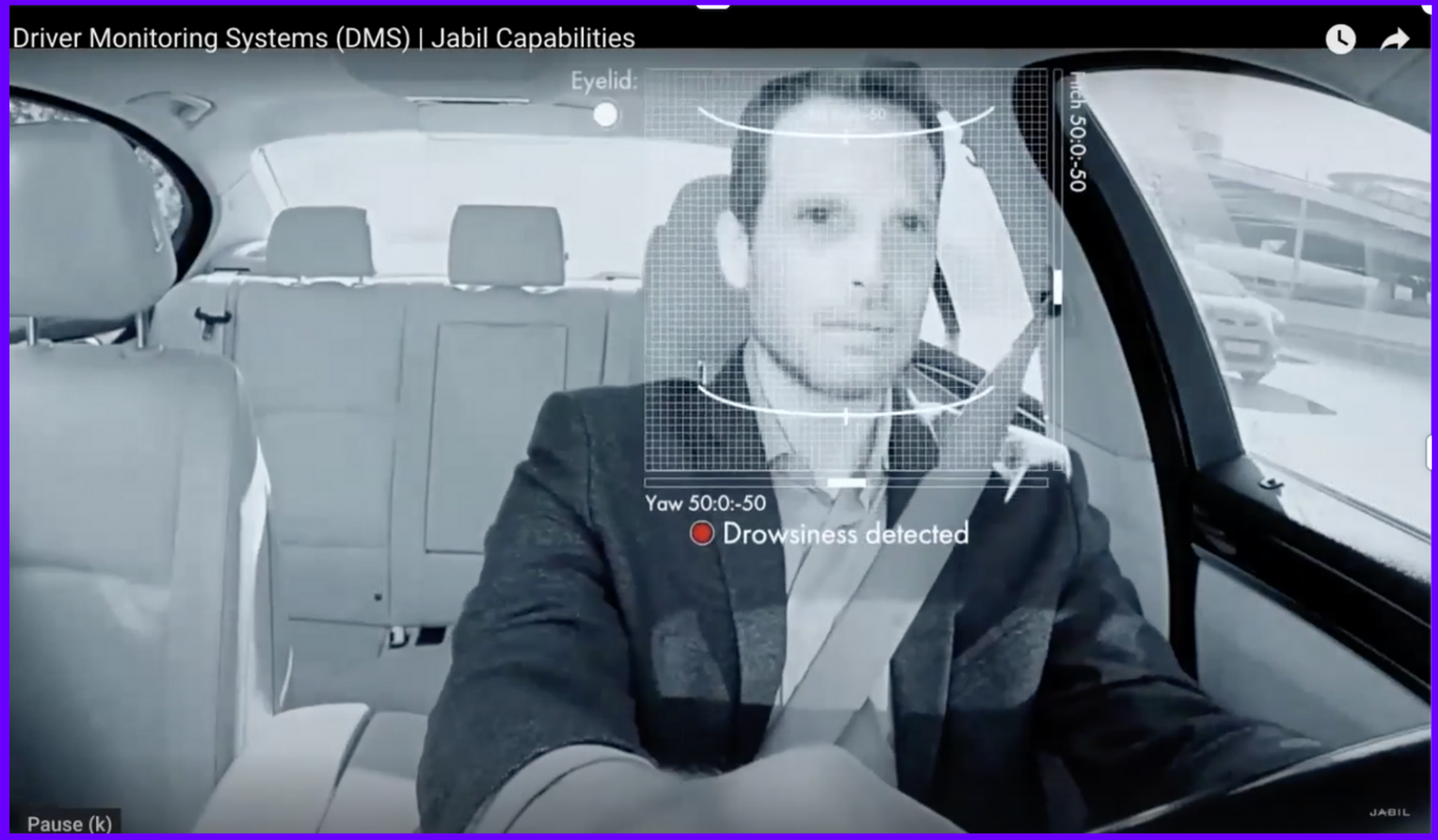


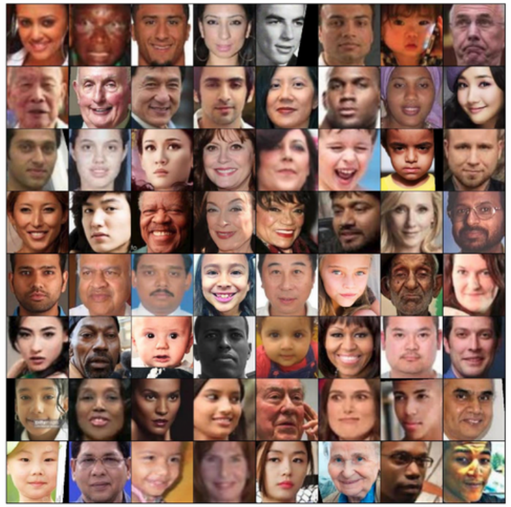
Image: SoundHound - Mercedes-Benz voice powered by Houndify

Driver Management System in Connected Vehicles



AI judging humans inside the car

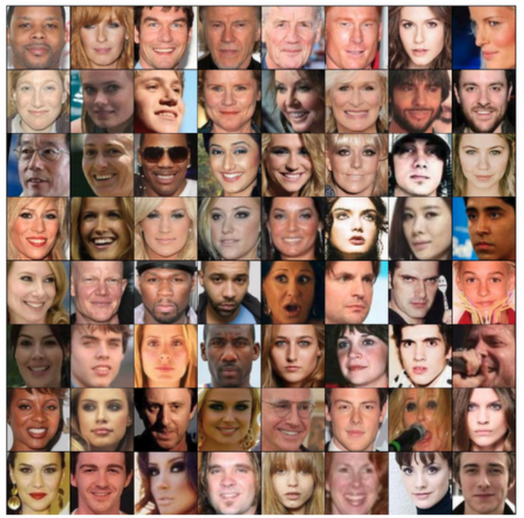
(a) FairFace



(b) UTKFace

"Inclusive Ethical AI In Human Computer Interaction in Autonomous Vehicles" , Sudha Jamthe , Yashaswini Viswanath, Suresh Lokiah, due publication JAIRWA April 2022 edition

(c) LFWA+



(d) CelebA

Driver Alertness AI in the Car

Citation: "Inclusive Construct Label-Centric Approach for Model Performance Enhancement in Autonomous Vehicles", MLDS 2022 Yashaswini Vishwanathan, Sudha Jamthe, Suresh Lokiah

V2X - Vehicle to Everything Communication -cV2X from Ford connects phone to cars

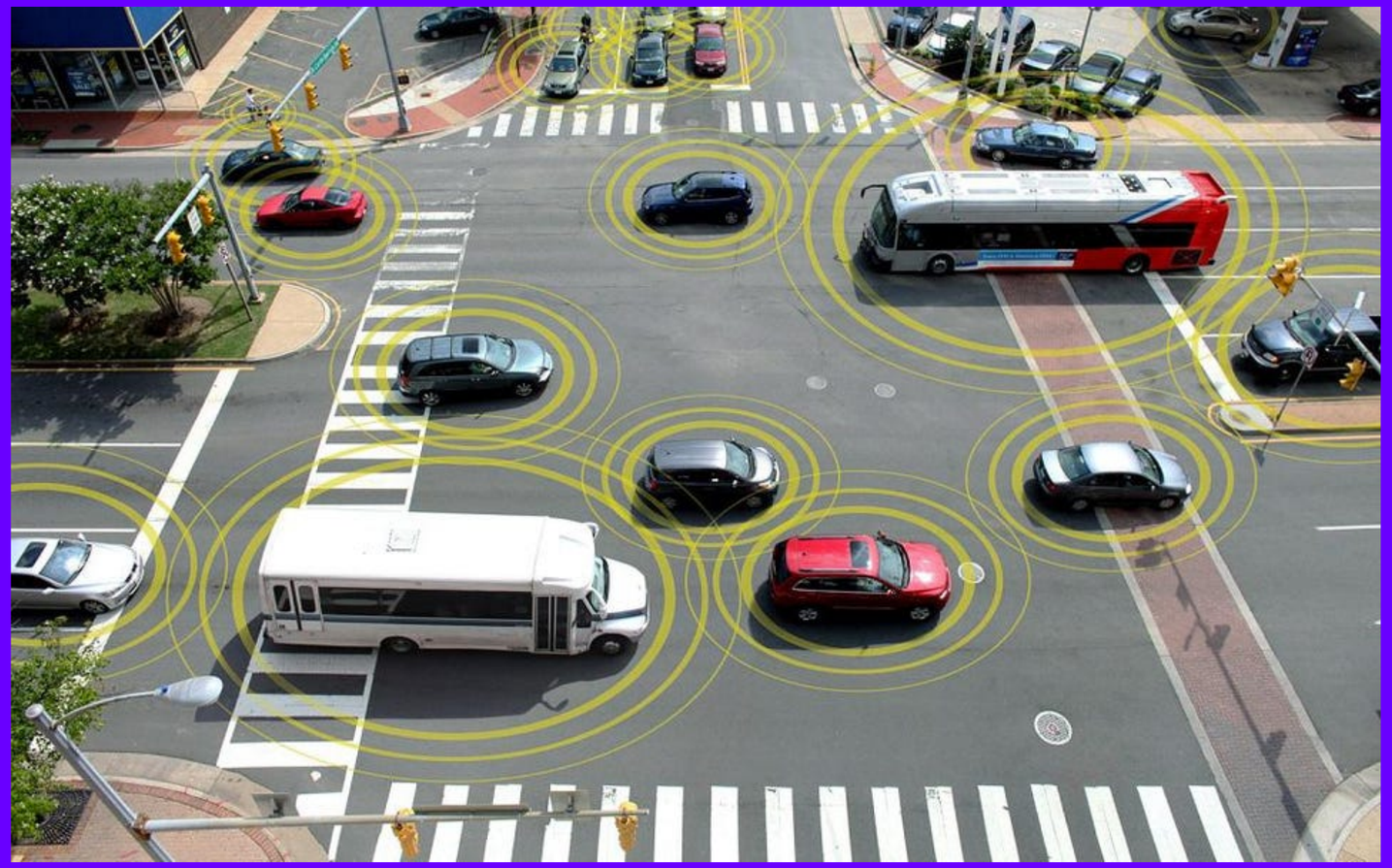


Image: NHTSA (National Highway Transportation USA)

Q & A

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Thank You