3D. RISK ASSESSMENT: NEW METHODS AND SOURCES OF DATA

HUMANISING AUTONOMY

Predictive AI to enable better interaction between people and urban mobility systems.

Patricia La Torre
Head of Strategic Partnerships
humanisingautonomy.com
paddy@humanisingautonomy.com

Urban mobility is not built for people

Urban mobility systems *do not understand people*, or how they interact with the world.

Vulnerable Road User (VRU) collisions *cost the industry $156B annually*.

The consequence

- Vehicle systems are unable to operate in urban environments at scale.
- Unmanageable risk of injury for pedestrians, cyclists and passengers.
- Slow progress in urban environments and poor customer experience.

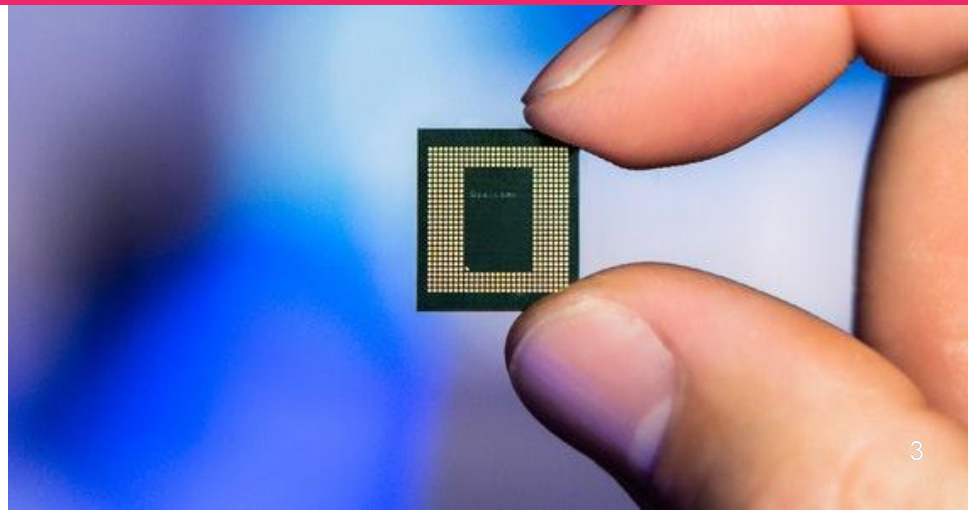
The solution: access to data

Unleashing automation at scale

We are creating the **global standard** that redefines the way machines interact with people in any environment.

We provide

A horizontal solution that captures the full range of human behaviours into an intent prediction engine that provides real time behaviour predictions and analytics.



A different approach

Unique combination of behavioural psychology, statistical AI and novel deep learning algorithms to extract observable and inferable behaviours from video data for fast & accurate intent predictions.

Safer journeys

Preventing hazards **2 seconds in advance**, reducing forward collisions with people by 90%

Faster progress

Efficiency can be **improved by 10X** reduction in false positives, due to better decision making and fewer unnecessary braking events

Smoother experience

99% crossing intent prediction accuracy, compared to 62% when only looking at physics-based approaches.

Enhanced efficiency

Fuel efficiency can be **increased by 20%** due to reduction of hard braking and acceleration events.

The product

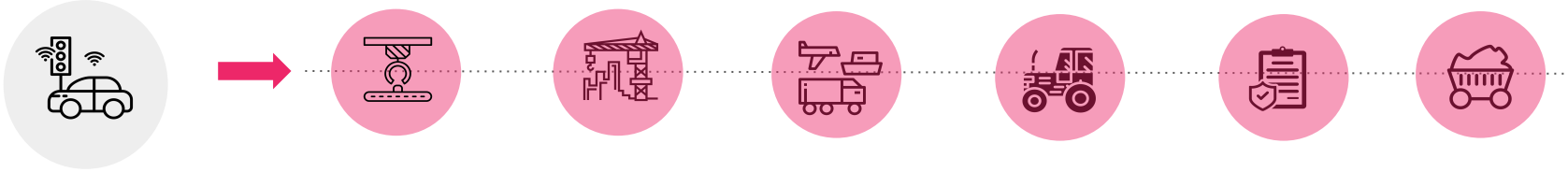
Modular and hardware-agnostic solution, with a small programming footprint that runs in real time to improve intelligence of all systems today across multiple industry verticals.

HA x Edge

Real time behaviour prediction
Solution for multiple low-power platform integration with devices, systems, vehicles, and machines for Advanced Driver Assistance Systems (ADAS), Aftermarket ADAS, AVs, construction, manufacturing, and robotics

HA x Cloud

Cloud-based behavioural analytics
large-scale video data analysis for smart city, infrastructure, fleet operators, manufacturing, robotics, and insurance, displayed in customisable and automated dashboard to identify trends or patterns for a variety of applications



Predictive AI for **Urban mobility**

Predictive AI for **manufacturing**

Predictive AI for **construction**

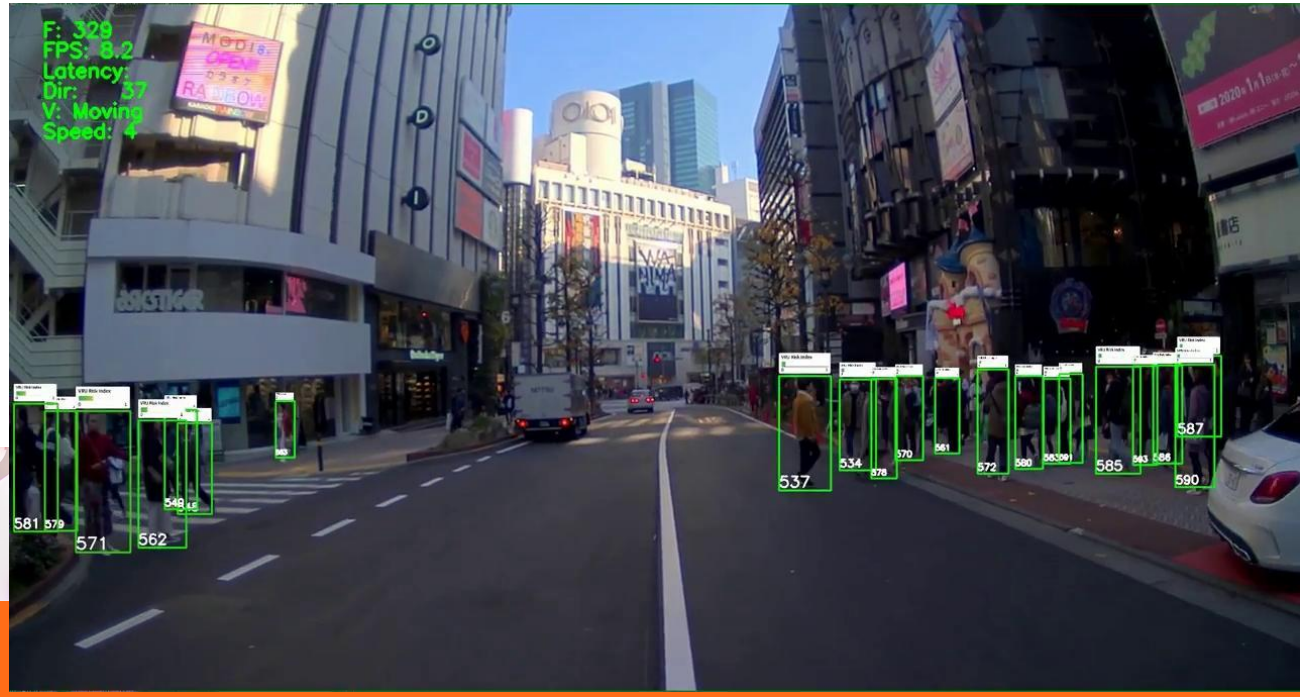
Predictive AI for **logistics**

Predictive AI for **agriculture**

Predictive AI for **insurance**

Predictive AI for **mining**

Performance



2s

advanced hazard perception than human response for ADAS systems and dashcam devices

10x

reduction in false positives for Autonomous Vehicles and ADAS

99%

crossing intent prediction for Autonomous vehicles, ADAS and devices.

HUMANISING AUTONOMY

Urban Mobility Partners

A powerful ecosystem is key to establishing market leadership and creates significant value.
Working with **data partnerships, technology partnerships, deployment partnerships, and direct licensees.**

DAIMLER · NVIDIA · BOSCH · Smart Mobility Living Lab London · connected automated driving.eu · techUK · arriva a DB company · Transport for Greater Manchester · CEVA LOGISTICS · STEER · WORLD ECONOMIC FORUM · TÜV SÜD

Ambarella · DRIVE SWEDEN · Qualcomm · bsi. · Department for International Trade · MITSUI FUDOSAN · Transport for London · TheRide · SIEMENS · Fraunhofer · PAVE

Introducing the team

Imperial College London

Panasonic

Qualcomm

UNIVERSITY OF CAMBRIDGE

TU Delft

TELECOM SudParis

SIEMENS

FCA FIAT CHRYSLER AUTOMOBILES

NUS National University of Singapore

BOSCH

HA Expertise

Technology, product, and commercial teams with years of experience in artificial intelligence, deep learning policy, embedded engineering, business development, and customer delivery.

Team Background

PhDs in autonomous robotics, path planning safety and pedestrian behavioural psychology and graduates from prestigious universities Valuable experience in the mobility and semiconductor industries.

Team culture

Passionate and dedicated team of 30 that is growing fast. Diversity is key with 50/50 gender balance across all teams.

Sources of Data

- Usable data is everywhere
- Data partnerships are key
- Privacy & ethics compliance
- Stress underrepresented VRUs

We provide actionable insights

Differentiator: privacy & ethics

Prioritising privacy, understanding the risks as a safety-critical function for autonomous systems, and the responsible usage of data are all core to our mission.

Using our platform to increase trust:

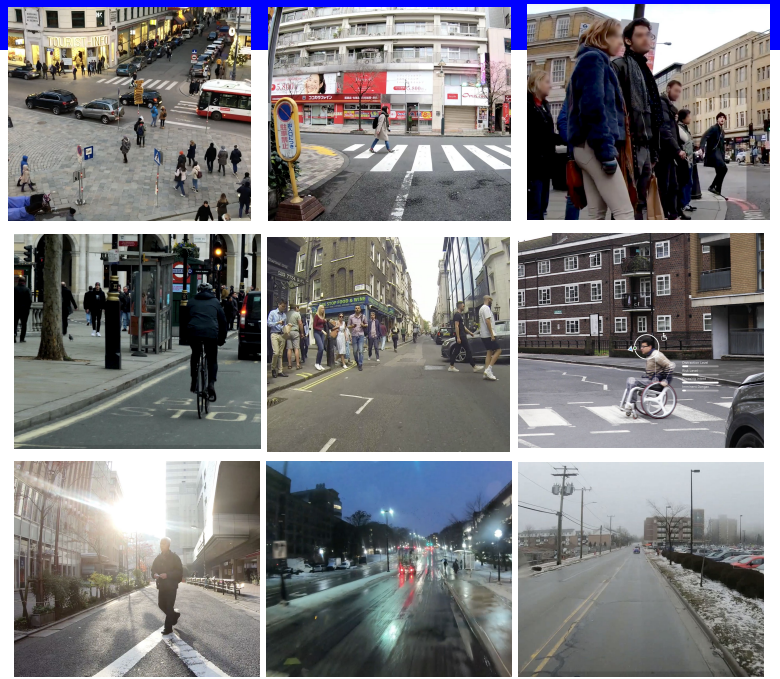
- Explainable and interpretable white box solution
- Never identify, track or trace
- Transparent and modular approach
- Strict protection measures
- Diverse and global training dataset

160M

Vulnerable road users

20

Urban environments



HAxEdge

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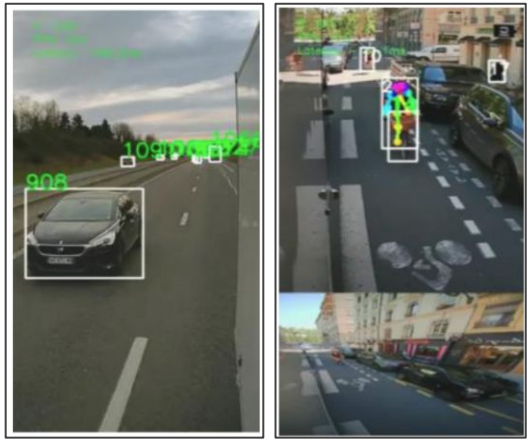
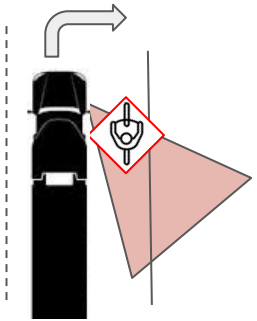
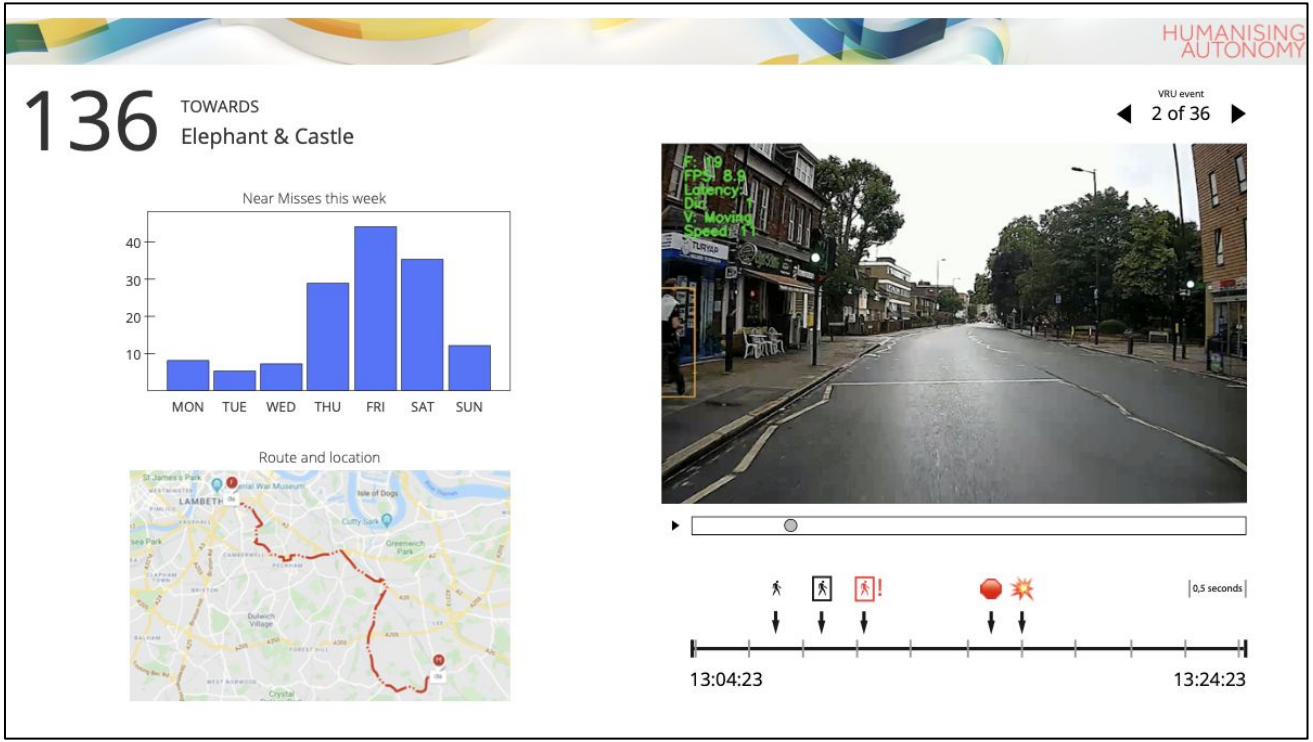
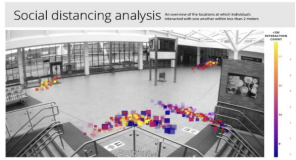
HAxEdge: seeing beyond the video





HAxCloud: Accident & Near-Miss Detection





InnovateUK funded Measuring Impact of Social Distancing on Transport (MISDT) project

Session 4A, Dec 1 14:00 - 15:15

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CCTV STATIC CAMERA

PEDESTRIAN & VEHICLE TRACKING

PEDESTRIAN CROSSING ALERTS

UNDERSTANDING BEHAVIOURAL PATTERNS

HUMANISING AUTONOMY

Smart Mobility Living Lab London

ALERTS

Pedestrian is crossing!

LEGEND

- Pedestrian tracking
- Pedestrian on pavement
- Pedestrian is crossing
- Vehicle tracking
- Vehicle approaching
- Vehicle parking
- Vehicle on pavement

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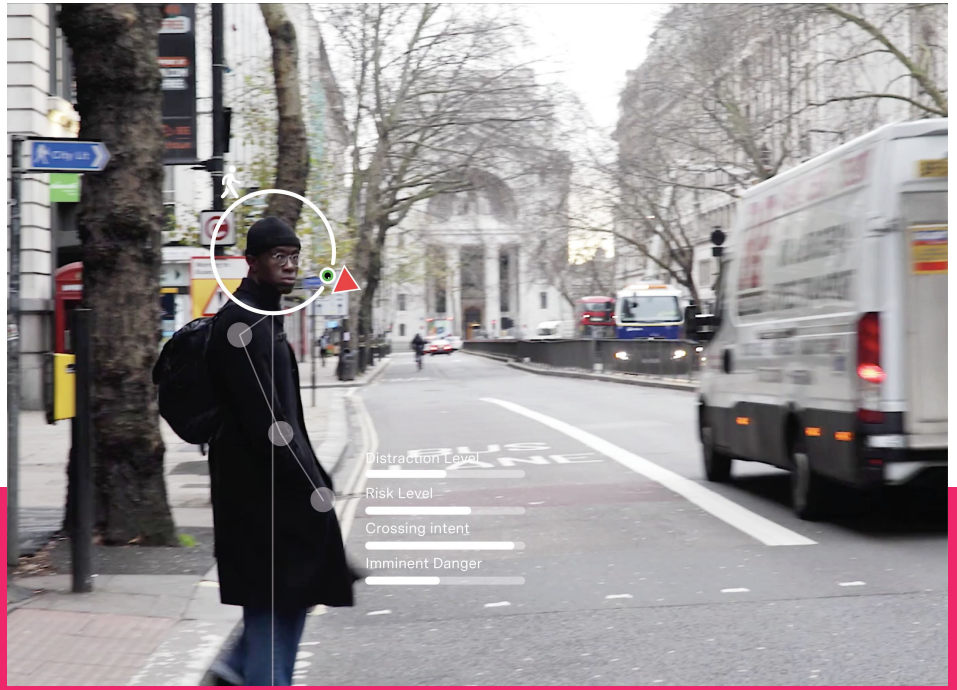

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