Perspectives on AI and its Uses

Scottish Futures Forum
22nd June 2022

Subramanian Ramamoorthy

School of Informatics, The University of Edinburgh

Edinburgh Centre for Robotics

The Alan Turing Institute

EDINBURGH CENTRE FOR ROBOTICS

THE UNIVERSITY of EDINBURGH informatics

The Alan Turing Institute

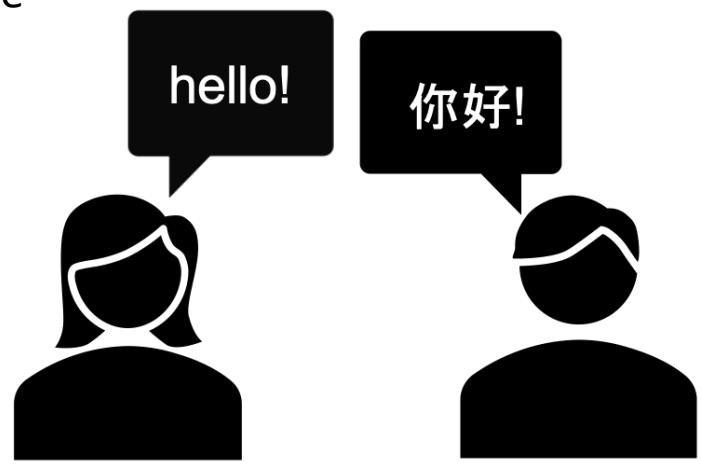
Many Forms & Uses of Artificial Intelligence (AI)

Computer vision for social care

[Img src: Med-technews.com]

Data mining for financial tech

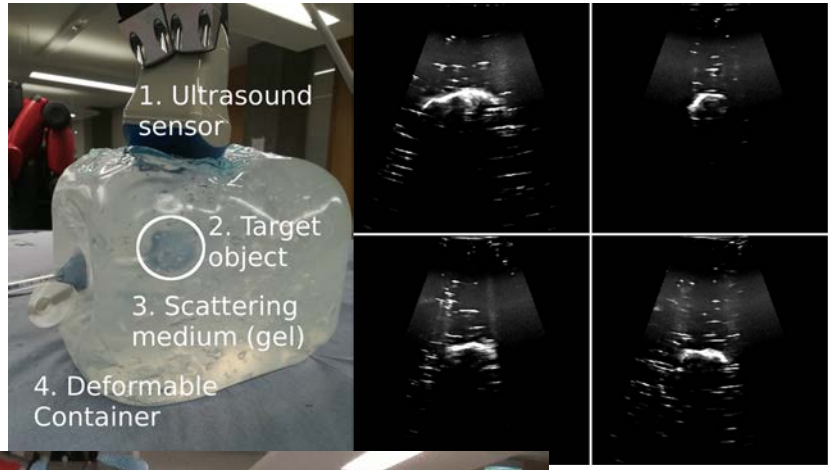
[Img src: firstbuyscheme.org.uk]



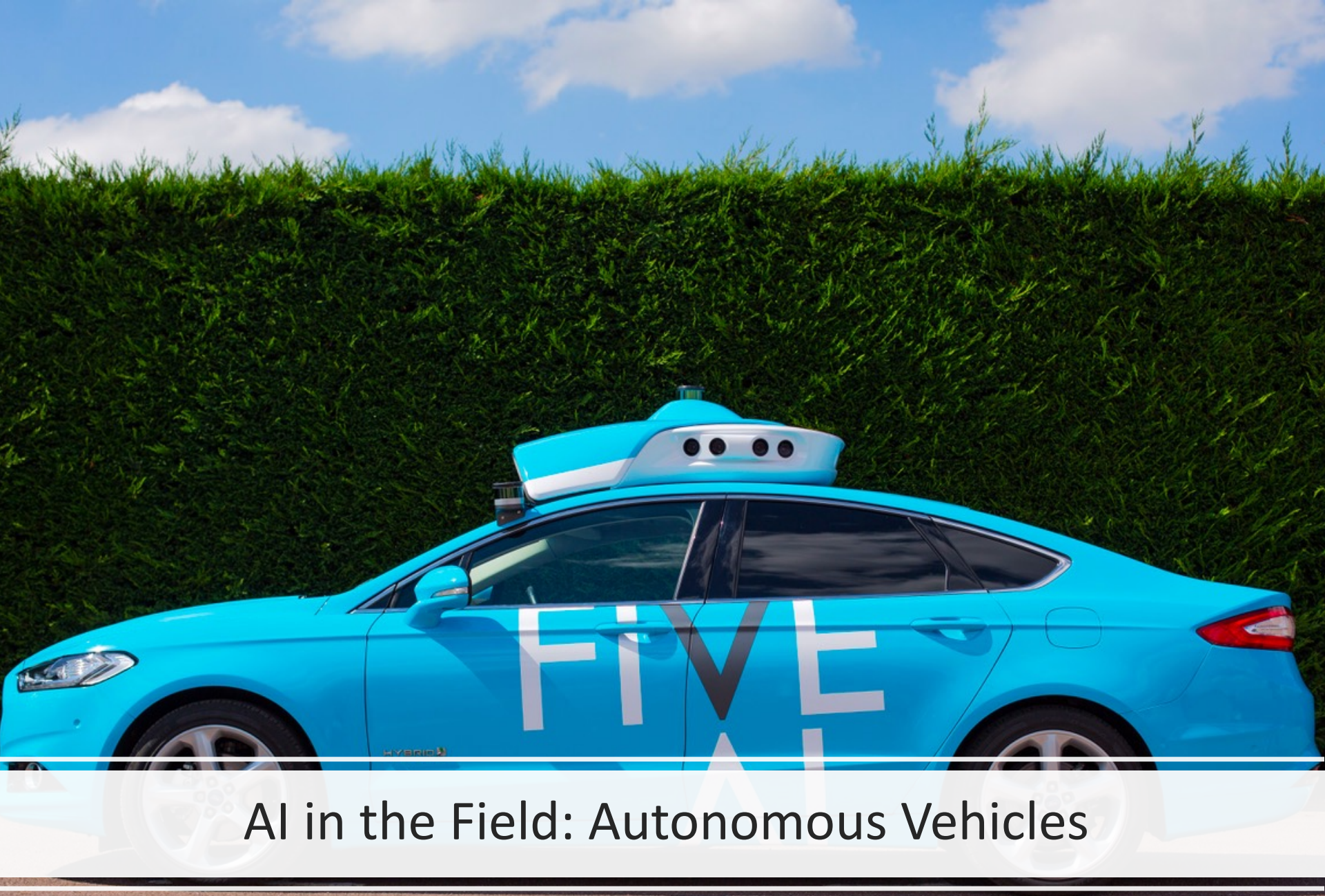
Language translation and chatbots for business process automation

[Img src: towardsdatascience.com]

Robotics in Healthcare:
Turing Fellowship Project: *sAlfer surgery*



https://www.turing.ac.uk/research/research-projects/safe-ai-surgical-assistance



AI in the Field: Autonomous Vehicles

Drive Testing in London since 2018

FIVE AI

© Five AI Inc 2019

Emerging Issues around Autonomy

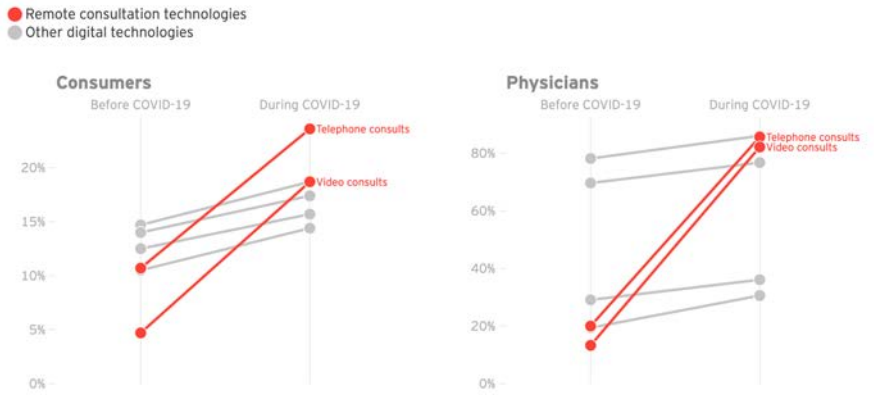
Autonomous Systems are being widely deployed in settings (e.g. self-driving cars, warehouse robots, trading agents):

- where more of the decision-making role is handed over to a machine
- where it affects a much broader set of stakeholders, and sometimes bystanders who were otherwise out of the loop
- where workflows are becoming significantly redefined due to this

The last point raises entirely new issues, e.g. due to:

- Shifts from expert-defined model and specs to data and labels
- Emergence of *continual* deployment pipelines and evolving functionality

Broad Landscape: Increasing Adoption of Digital Technologies, e.g. in Healthcare



How COVID-19 has triggered a sprint toward smarter health care
https://www.ey.com/en_uk/health/how-covid-19-has-triggered-a-sprint-toward-smarter-health-care

Broad Landscape: New Questions Arising from New Technology

Nov 6, 2021, 06:05pm EDT | 12,438 views

Biden's $1.2 Trillion Infrastructure Bill Hastens Beacons For Bicyclists And Pedestrians Enabling Detection By Connected Cars

Carlton Reid Senior Contributor ⓘ
Sustainability
I have been writing about transport for 30 years.

Follow

thebmj covid-19 Research ⌄ Education ⌄ News & Views ⌄ Campaigns ⌄

Research

Use of artificial intelligence for image analysis in breast cancer screening programmes: systematic review of test accuracy

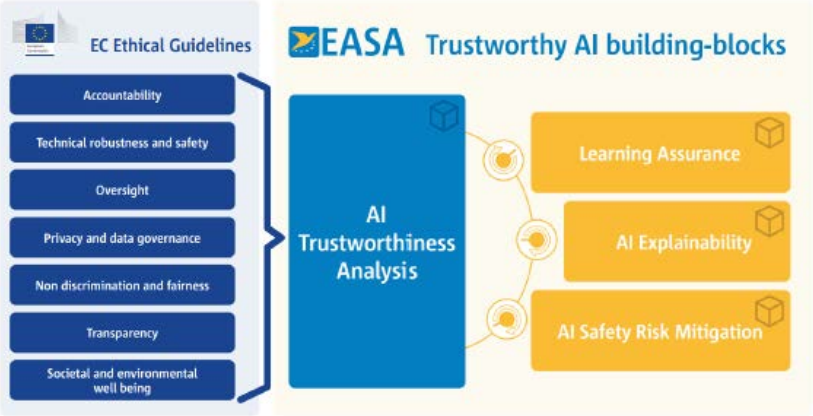
BMJ 2021 ; 374 doi: https://doi.org/10.1136/bmj.n1872 (Published 02 September 2021)
Cite this as: *BMJ* 2021;374:n1872

Conclusions Current evidence for AI does not yet allow judgement of its accuracy in breast cancer screening programmes, and it is unclear where on the clinical pathway AI might be of most benefit. AI systems are not sufficiently specific to replace radiologist double reading in screening programmes. Promising results in smaller studies are not replicated in larger studies. Prospective studies are required to measure the effect of AI in clinical practice. Such studies will require clear stopping rules to ensure that AI does not reduce programme specificity.

Safety Assurance objectives for Autonomous Systems

Version 2.0 [SCSC-153A]

Safety of Autonomous Systems Working Group [SASWG]



Building Trust through Testing

Adapting DOD's Test & Evaluation, Validation & Verification (TEVV) Enterprise for Machine Learning Systems, including Deep Learning Systems

AUTHORS
Michèle A. Flournoy
Avril Haines
Gabrielle Chefitz

Responsible Development, Use and Governance of AI Working Group Report

November 2020 - GPAI Montréal Summit

The UKRI TAS Programme

The TAS Hub is funded as part of the Strategic Priorities Fund (SPF) which funds multi- and interdisciplinary research across 34 themes in response to strategic priorities and opportunities.

Total Funding **£33m over 4 years**	**Universities** **20+**	**Industry Partners** **100+**
Funding **Hub: £11.7m** **Nodes : £3m each**	**Researchers** **130+**	**Disciplines** **10+**

World's largest research programme in Trustworthy AI and Autonomous Systems