Limitations with A.I

DAVE3625

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DAVE3625- INTRO TO A.I. BY UMAIR M.I

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Excitement around A.I

- PwC and McKinsey have predicted that AI will add $16 trn to the world economy by 2030
- Google’s boss, has described developments in AI as “more profound than fire or electricity”.
- AI is an advanced algorithm: All things which were impossible to do by human programmers can be done by A.I
- Autonomous robots (we will be able to make General A.I).
- AI is the new electricity: Its a force which will power everything

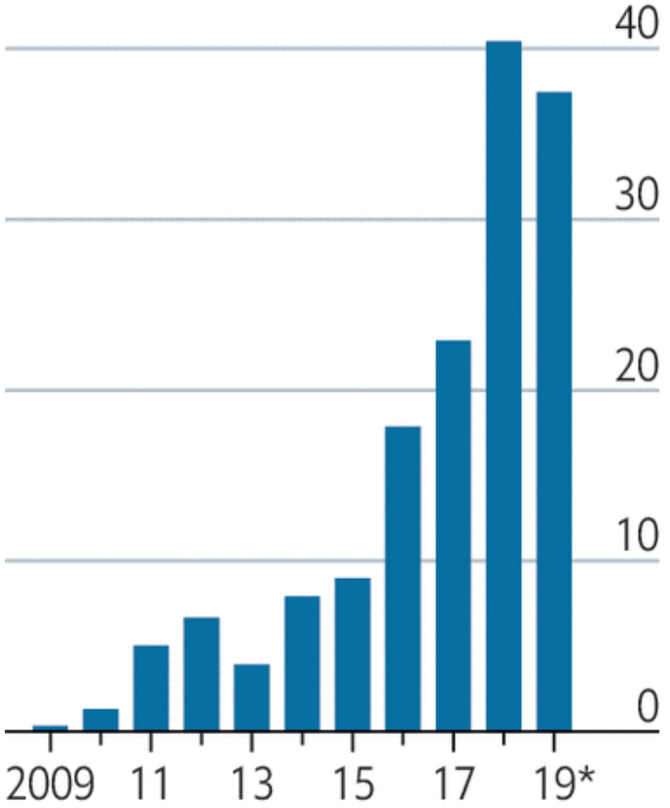
- Self driving car companies predict that robo taxis will revolutionalize transport
- In 2016 Geoffrey Hinton, remarked that we should stop training radiologists and instead unleash the power of A.I in health
- An AI firm called BlueDot claims it spotted signs of a novel virus in reports from Chinese hospitals as early as December 2019 (ref Economist).
- Almost all companies today either have an A.I strategy or are thinking of adopting one.
- And many more such exciting examples..

On the up

Worldwide

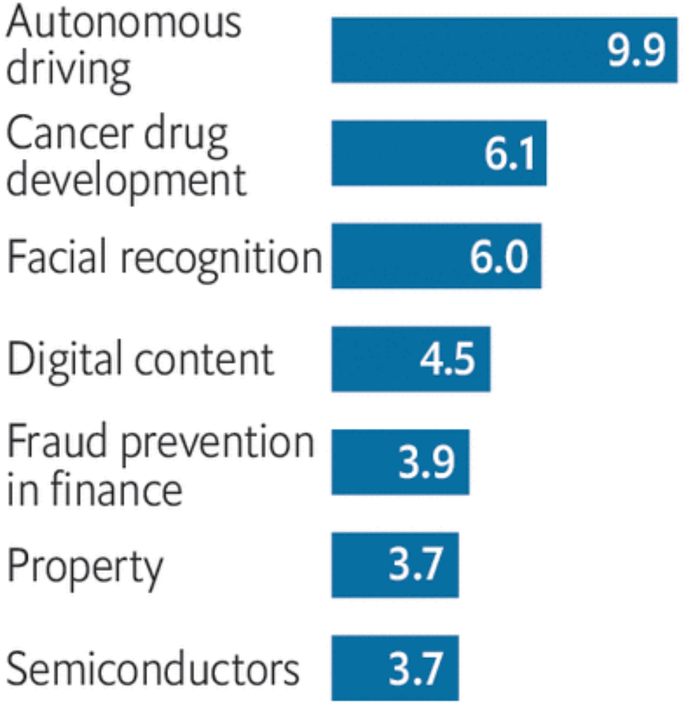
Total private investment in AI

$bn



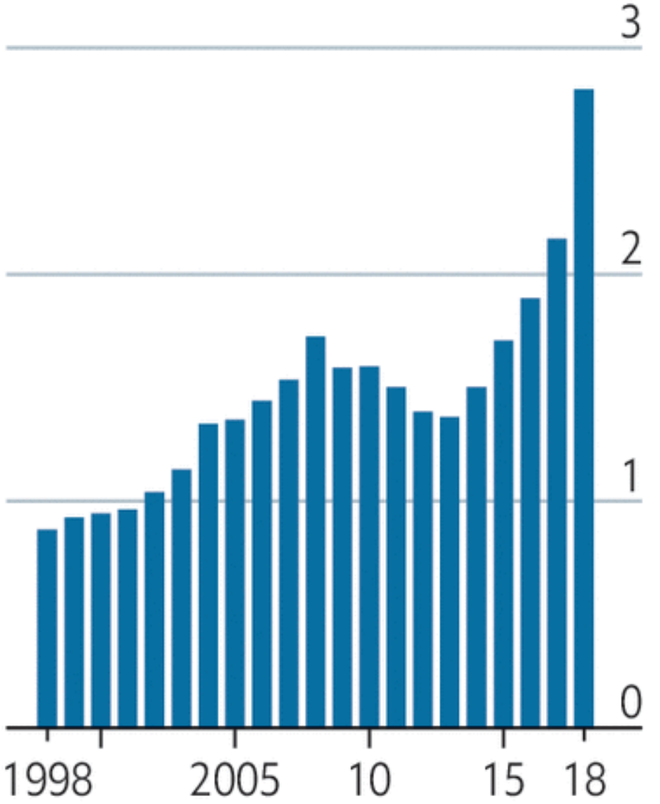
Private investment in AI, 2018-19

By sector, % of total



AI papers published

% of all publications



Source: Stanford Institute for Human-Centred Artificial Intelligence

*To October

The Economist

But.. where is my self driving car ?

Reality of A.I

- A.I has evolved, yes, but it is still far away from the promise of a fully autonomous system
- Self driving cars are more capable but still are not safe enough to put on the streets
- Use of A.I in health is taking longer than expected. There is still a worldwide shortage of human radiologists
- Most companies find A.I hard to implement
  - a survey of European ai startups by mmc, a venture-capital fund, found that 40% did not seem to be using any ai at all (ref: Economist)

OSLOMET

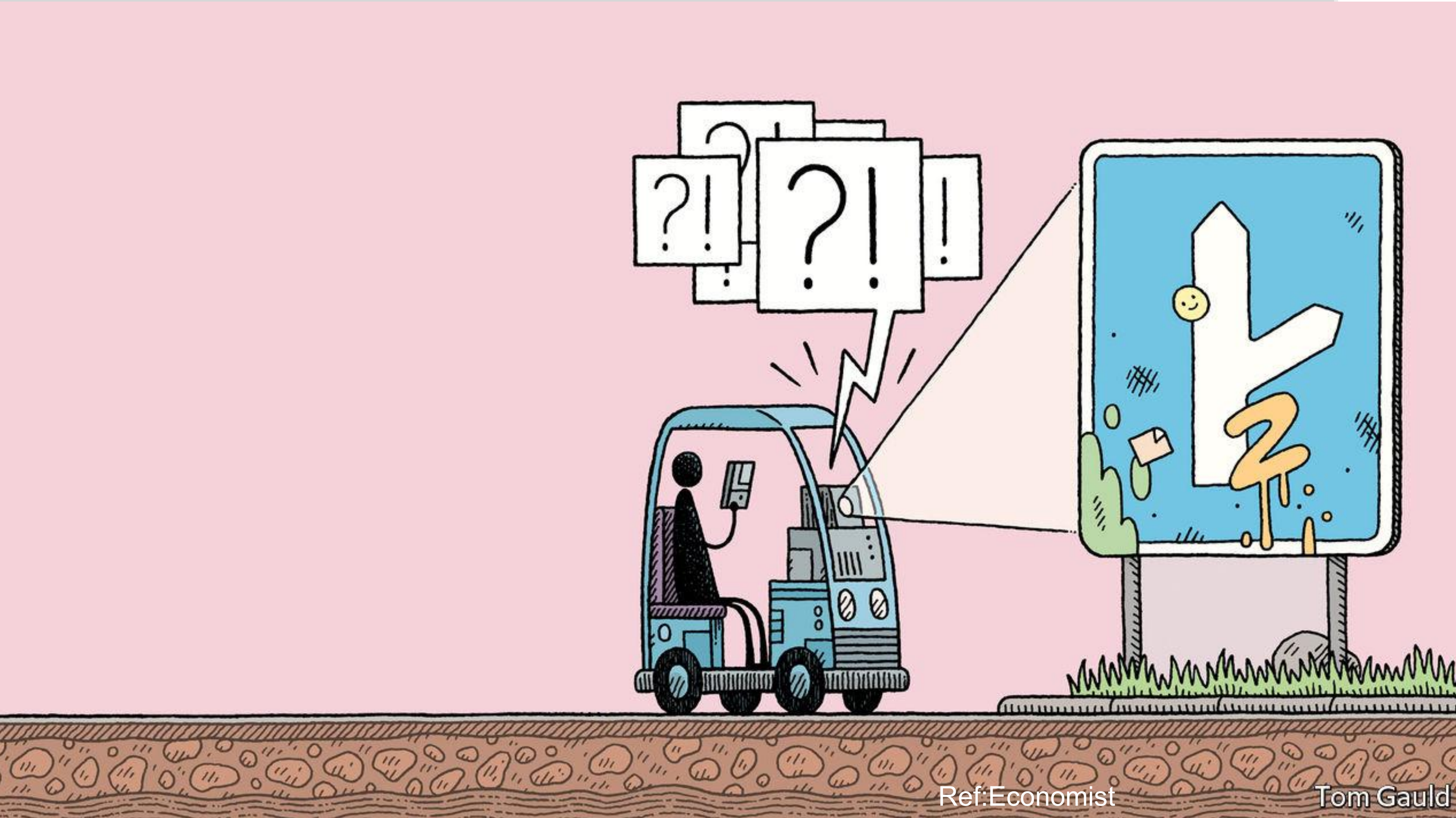
The hype of A.I has far exceeded the science of A.I

After years of hype, people think A.I has still not delivered

1. Driverless cars

The state of driverless cars

1. Tesla claims to have autonomous driving (2018) but drivers still need to keep their hands on the wheels
2. General Motors planned to launch self driving taxis in San Francisco by 2019.
3. In 2019 a self drivign car by Uber became the first to kill a pedestrian
4. Waymo in America and WeRide in China, are geographically limited and rely on human safety drivers.
5. Many driverless car startups going bankrupt because the technology is hard to master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Ref:Economist
Tom Gauld

Training an A.I algorithm to achieve the last 10% is much much harder than the first 90%

2. Data is harder to come by

Data issues

1. Amazon Go stores was a unique idea. So unique that it was hard for them to find data to train their algorithms
    1. there was no such training set featuring people browsing in shops.
    2. They fixed this by creating a virtual shopping environment

2. An A.I health system designed to work for one hospital might not have the same results for another hospital

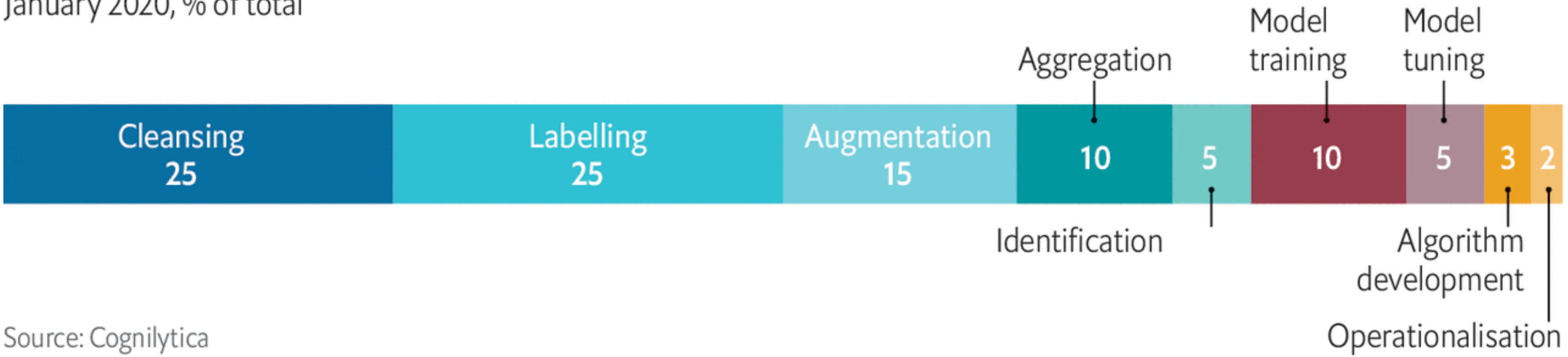
Data Bias:

1. Most facial recognition systems today use a higher proportion of white faces as training data (study by IBM in 2019)
2. Companies today cannot discriminate on sex, age or race while recruiting people but A.I algorithms can outsmart this process by using variables to reconstruct forbidden information

More complex than it looks

Average time allocated to machine-learning project tasks

January 2020, % of total



Source: Cognilytica

The Economist

- Self driving cars use a lot of virtual reality environments to train their cars since there are not so many self driving cars.
- Data annonimization is hard and still does not work 100%
- Facial recognition systems are sturggling to identify faces in the covid times where everyone covers their faces.

Data Markets

- Data preperation market was worth more than $1.5bn in 2019 and could grow to $3.5bn by 2024 (ref economist)
- The data labeling business could be $4.1bn by 2024 (ref economist)
- Data is the new oil term is not relevany anymore.
  - Processed data is the key

3. Hard for businesses to adopt A.I

Use of A.I in corporations

1. Most A.I examples we hear come from big tech giants (e.g Facebook, Amazon, Google, TikTok etc)
    1. Their brilliant algorithms justify their over the top valuations

2. But adoption of A.I stops with tech giants
3. Non-tech companies find it harder to see the benefits of using A.I (ref: Boston consultancy)