Big Data and The Great A.I. Awakening

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Data as an Economic Asset

"I think we're just beginning to grapple with implications of data as an economic asset"
–Steve Lohr (The New York Times)

Data and Economic Power

The companies with big data pools can have great economic power.

Today, that shortlist would include Google, Microsoft, Facebook, Amazon, Apple and Baidu.

What is more important, vast data pools, sophisticated algorithms or deep pockets?

 "No one can replicate your data. It's the defensible barrier, not algorithms."

-- **Andrew Ng**, Stanford professor and chief scientist at Baidu.

Algorithms and Data

"AI is akin to building a rocket ship. You need a huge engine and a lot of fuel. The rocket engine is the learning algorithms but the fuel is the huge amounts of data we can feed to these algorithms."

-- Andrew Ng

What are the societal implications?

◌ Technology is moving beyond increasing the odds of making a sale, to being used in higher-stakes decisions like medical diagnosis, loan approvals, hiring and crime prevention.

◌ *What are the societal implications of this?*

Using Data Science and AI Tools

ଔ The new, higher-stakes decisions that **data science** and **AI tools** are increasingly being used to make — or assist in making — are fundamentally different than marketing and advertising.

ଔ In marketing and advertising, a decision that is better on average is plenty good enough. You've increased sales and made more money. You don't really have to know why.

--**Steve Lohr**

One stage in the life cycle of an emerging science. Marketing is a low-risk – and, yes, lucrative

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"What happens if my algorithm is wrong? Someone sees the wrong ad. What's the harm? It's not a false positive for breast cancer."

-- Claudia Perlich, chief scientist at an ad-targeting start-up in New York, Dstillery.

Ethical Implications

ࢍ But the other decisions are **practically** and **ethically** very different.

ࢍ These are crucial decisions about **individual people's lives.** Better on average isn't good enough.

ࢍ For these kinds of decisions, issues of accuracy, fairness and discrimination come into play.

Automate or **Augment humans**?

ɑ You can use AI technologies either to **automate** or to **augment** humans.

ɑ Are computer system designers the ones who will decide what the impact of these technologies are and whether to replace or augment humans in society?

What are the ethical responsibilities of designers of intelligent systems?

ॐ "I think the most important aspect of this question is the simple **acknowledgement** that **intelligent system designers do have ethical responsibilities.**"

  --**John Markoff (The New York Times)**

  "We have a **profound ethical responsibility** to design
   systems that have a positive impact on society, obey the law,
   and adhere to our highest ethical standards."

   –Oren Etzioni
   Chief Executive Officer **Allen Institute for Artificial Intelligence.**

Ethics by Design?

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  ℰ **Some sort of auditing tool**; the technology has to be able to explain itself, to explain how a data-driven algorithm came to the decision or recommendation that it did.

  ℰ **"Human in the loop"** for most of these kinds of decisions for the foreseeable future.

  --Steve Lohr

If humans delegate decisions to machines, who will be responsible for the consequences?

- Ben Shneiderman (University of Maryland) argues against autonomous systems.

- His point is that it is essential to **keep a human in the loop**. If not you run the **risk of abdicating ethical responsibility for system design.**

- **Is it realistic?** If something can be partially automated, will it eventually be fully automated?

- Do we need to **regulate the development of artificial intelligence?**

The thing that **motivates** my **actions** will determine the **direction** I am going

The individual (and collective) conscience is the existential place where the most significant things happen.

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ର **Research, Change, Decision and Choice** can take two diametrically opposite directions:

can be either "pro or contra" the human person".

ର Source: "The good society and the future of jobs: Can solidarity and fraternity be part of business decisions?" MAY 8 -10, 2014 - VC

"Data for Humanities"

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ભ An initiative I started with **Andrej Zwitter** (Professor at the University of Groningen) at the end of 2015, with the goal to:

bring people and institutions together who share the ***motivation to use data for the common good.***

which calls for the use of five ethical principles for the use of data- has reached more than 1,000 signatories.

www.bigdata.uni-frankfurt.de/dataforhumanity/

Five ethical principles when using data

℘ Do no harm

℘ Use data to help create peaceful coexistence

℘ Use data to help vulnerable people and people in need

℘ Use data to preserve and improve natural environment

℘ Use data to help create a fair world without discrimination