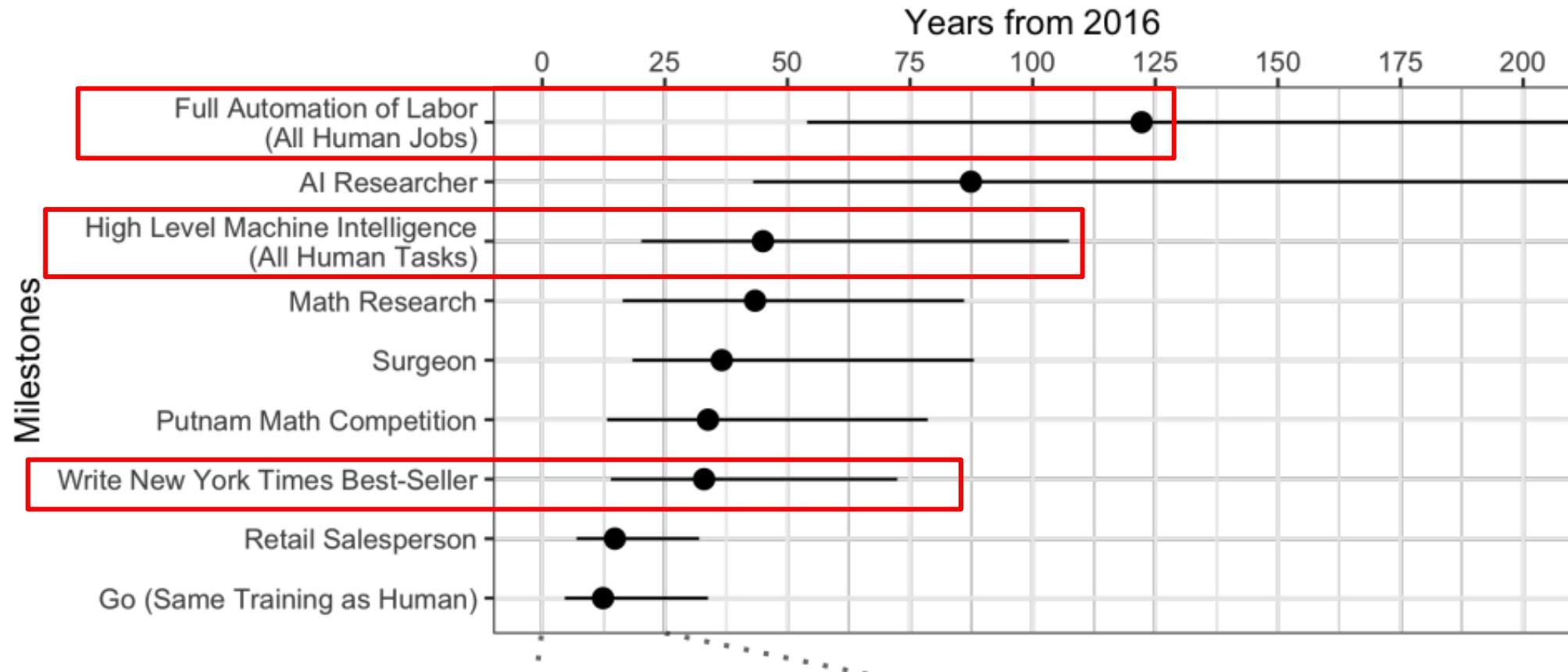


Social Responsibility and Ethical Issues about Smart Technology Usage

Prof.Dr.Sc. Mirjana Pejić Bach

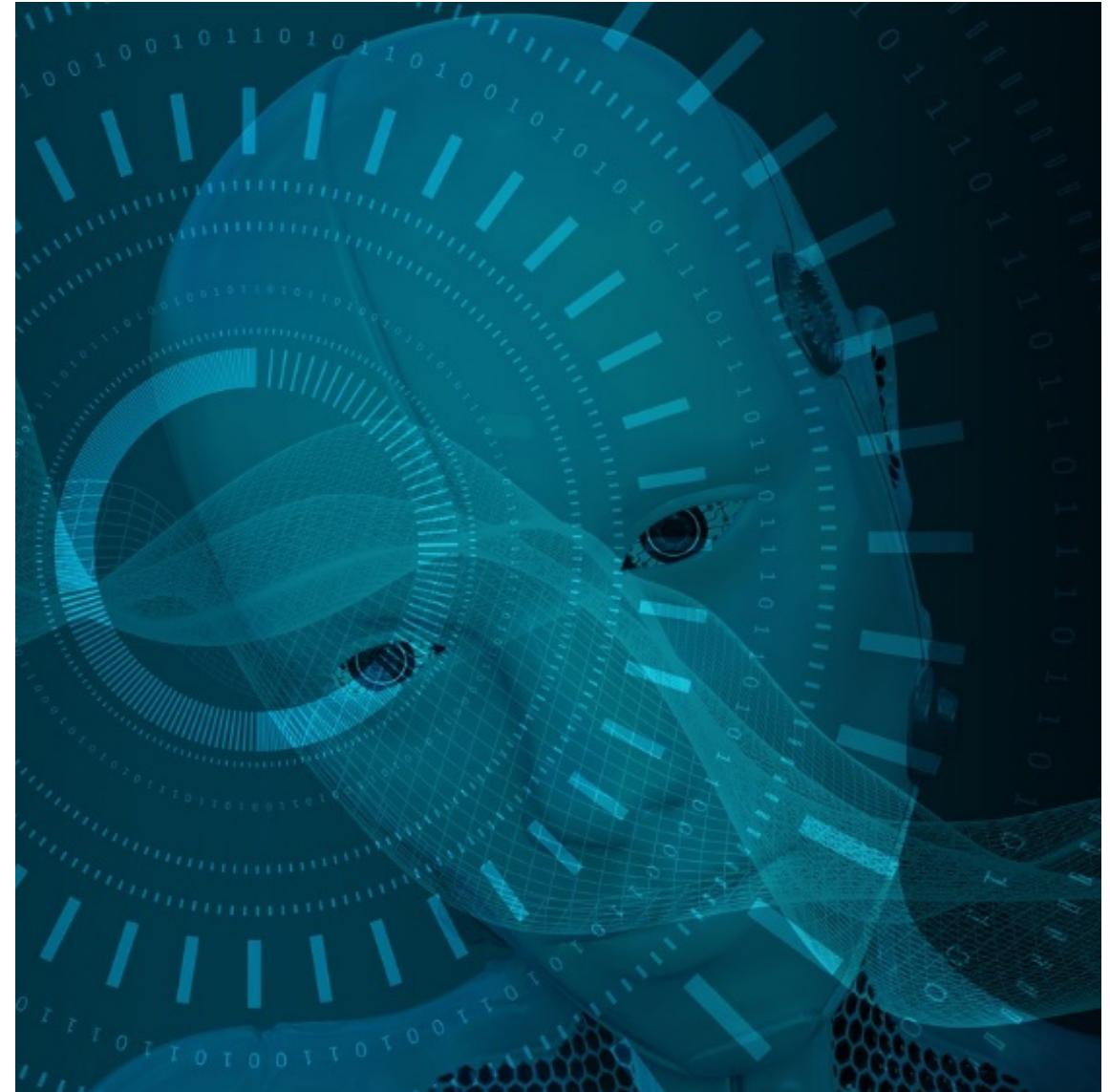
University of Zagreb, Faculty of Economics and Business

When Will AI Exceed Human Performance?



Ref: arxiv.org/abs/1705.08807 : When Will AI Exceed Human Performance? Evidence from AI Experts

- 1. Is it possible? e.g. that the smart technologies will replace all human labour?**
- 2. If yes, do we want it? ... e.g. how it will impact the quality of life?**
- 3. If we want it, who will control it? ... e.g. companies or government**



The role of science...

- To **develop** smart technologies
- To **discuss and foresight** the impact of smart technologies
- To **propose solutions** for preventing negative impact and to **participate in their implementation**

Goal of the presentation

In order to explore the current role of ethics in smart technology research, the preliminary literature review analysis has been conducted, with the goal to reveal:

- **the time trend**
- **the main financing institutions**
- **the main topics**

using bibliometric and text mining analysis.

Methodology

Bibliometric analysis

Scopus

- (TITLE-ABS-KEY (ethics) AND (smart AND technology))
- 2,021 document results

2,021 document results

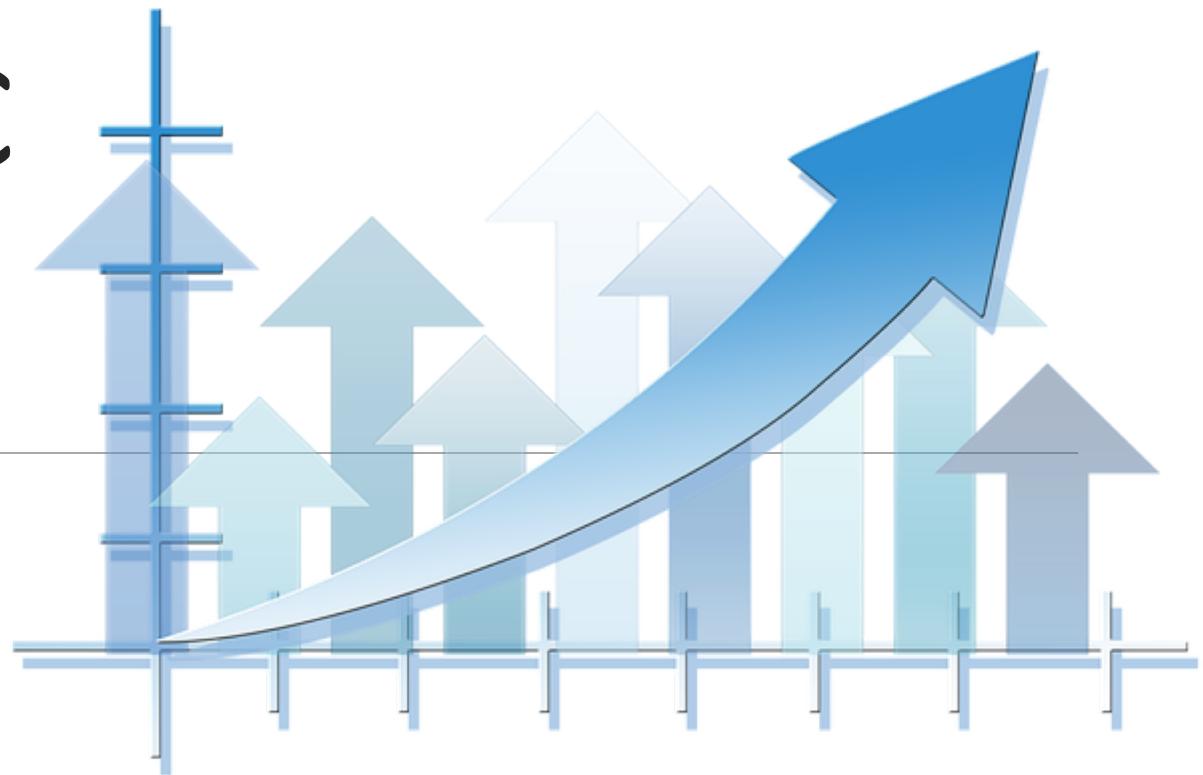
(TITLE-ABS-KEY (ethics) AND (smart AND technology))

Text mining

- Key-word extraction
- Topic mining

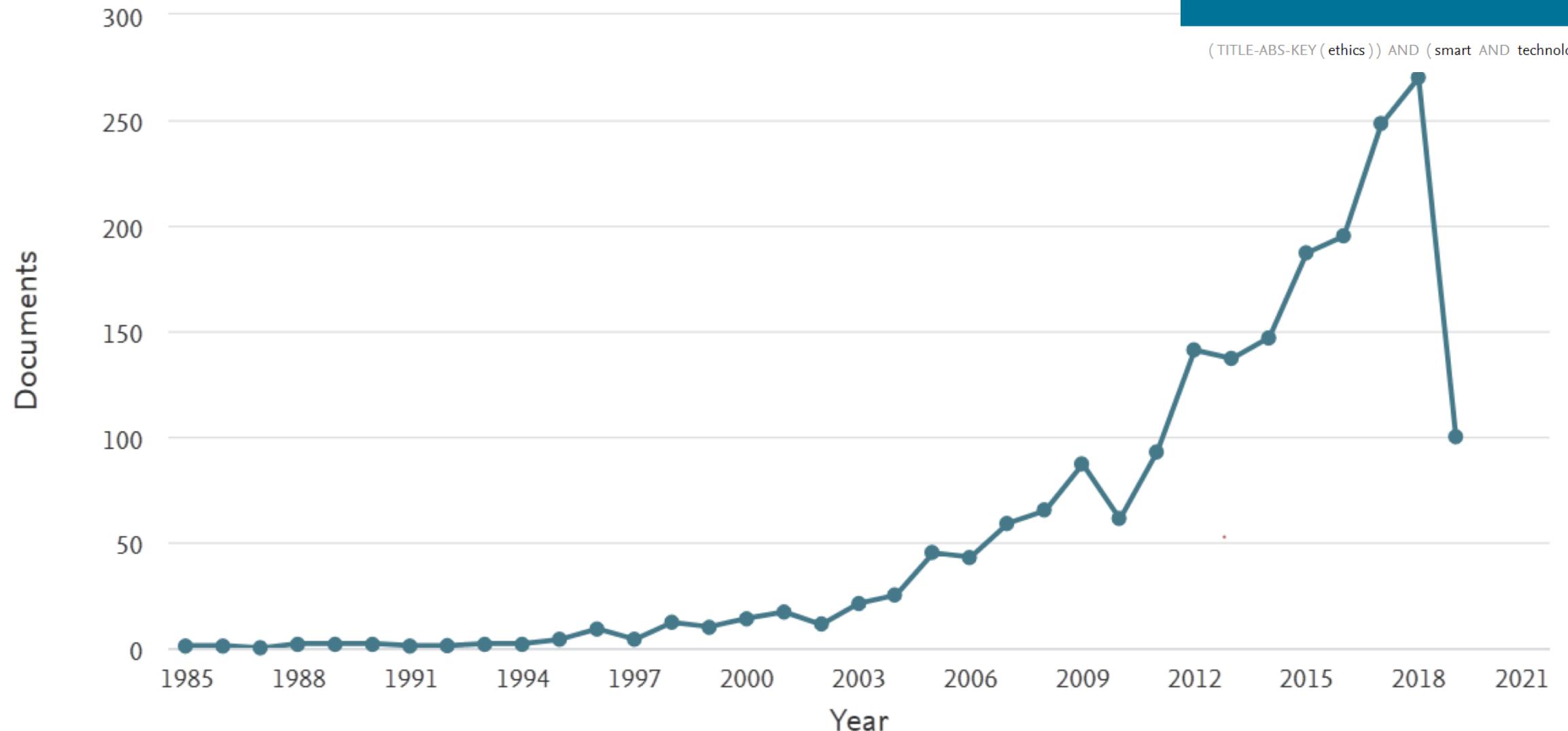


Bibliometric analysis



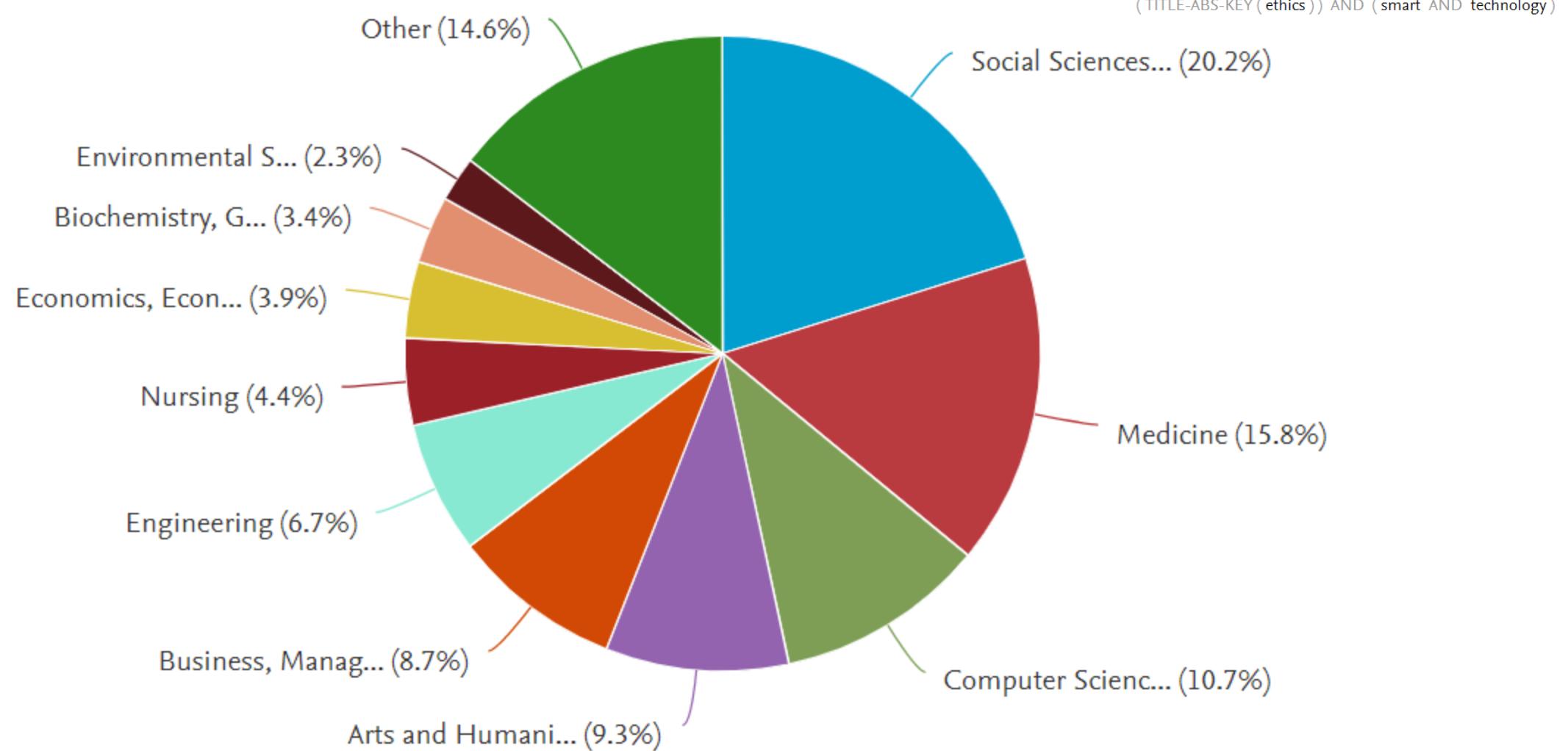
Documents by year

2,021 document results



Documents by subject area

2,021 document results

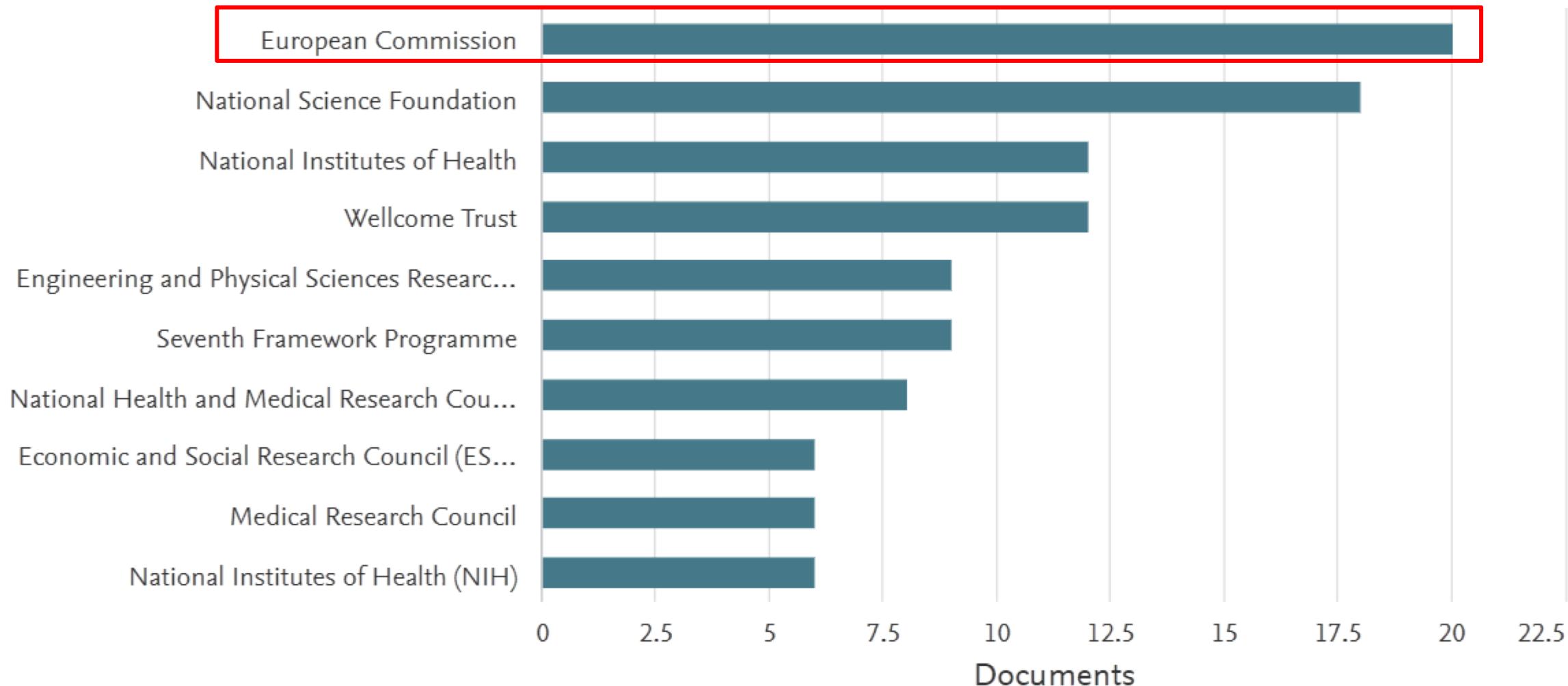


2,021 document results

Documents by funding sponsor

Compare the document counts for up to 15 funding sponsors.

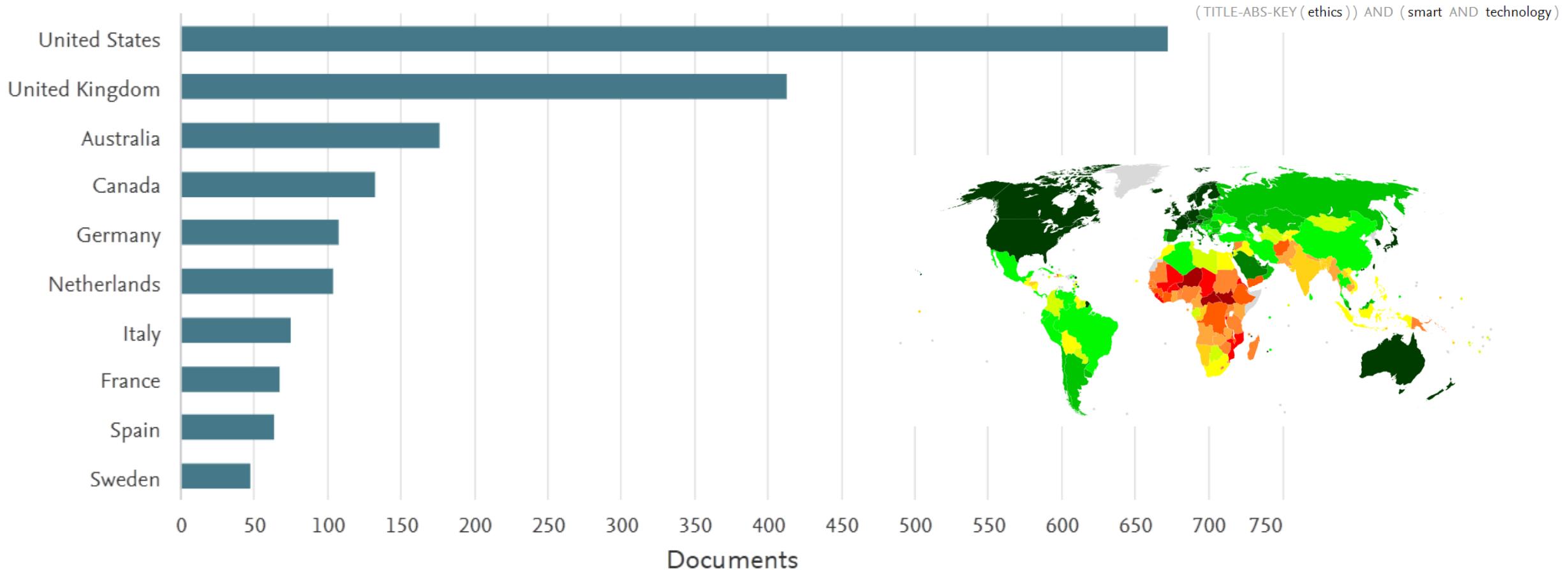
(TITLE-ABS-KEY(ethics)) AND (smart AND technology)



Documents by country or territory

Compare the document counts for up to 15 countries/territories.

2,021 document results



Text mining



Methodology

- Text mining is the process of **exploring and analyzing** large amounts of **unstructured text** aided by software that can identify **concepts, patterns, topics, keywords** and other attributes in the data.
- **1st step – word and phrases extraction** – Where is the concern?
- **2nd step – topic extraction using cluster analysis** – What issues are in the focus?

Where is the concern?

Word extraction

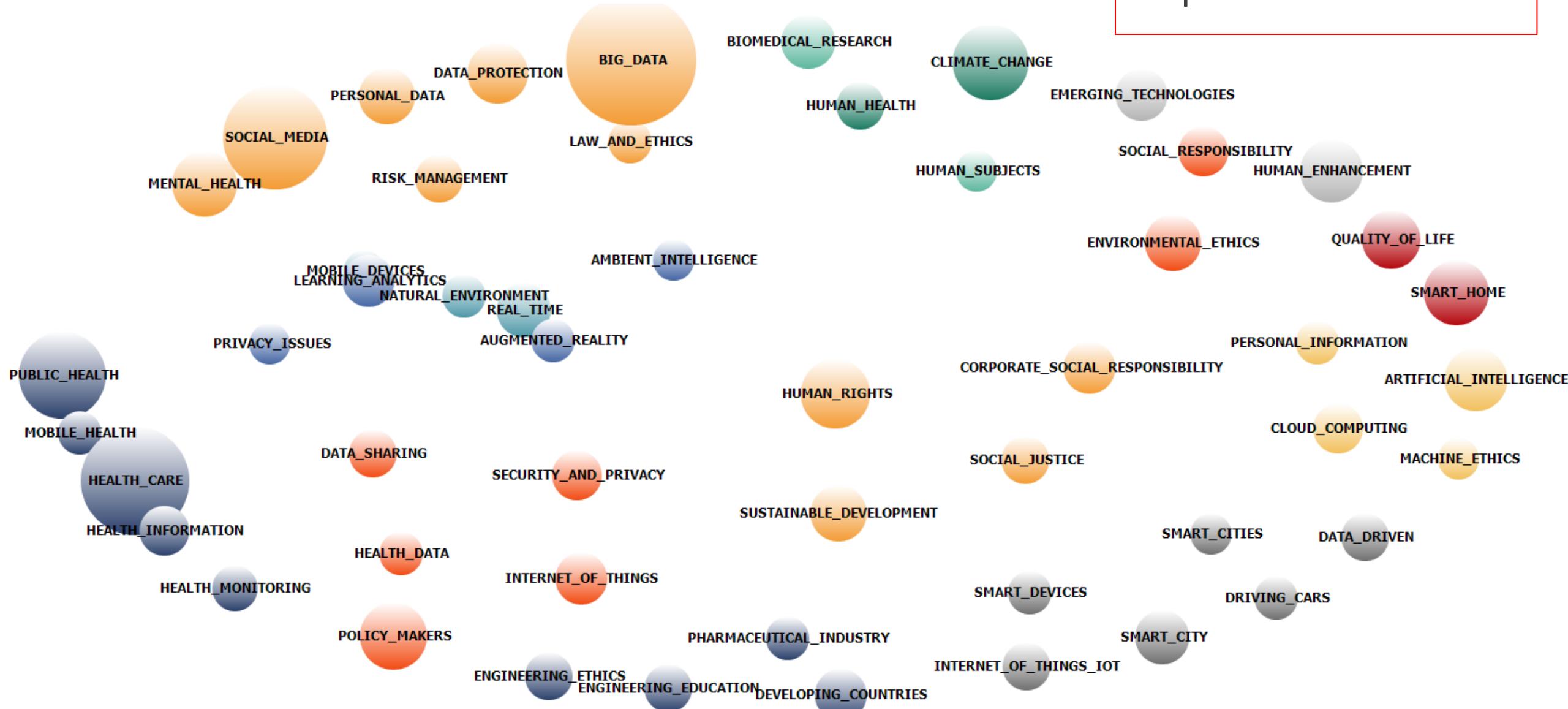
METHODS
STUDIES POTENTIAL MANAGEMENT STUDENTS
SYSTEMS STUDY DEVELOPMENT
ETHICAL BASED INFORMATION
ARTICLE CURRENT SOCIETY RELATED
RESULTS BUSINESS MORAL
PEOPLE DESIGN SOCIAL DATA PAPER APPROACH
TECHNOLOGY WORK HEALTH
CARE TECHNOLOGIES BOOK ISSUES
SCIENCE PUBLIC SMART ANALYSIS SYSTEM
CHALLENGES SECURITY IMPORTANT

Phrases extraction

DRIVING CARS HEALTH DATA
ENGINEERING EDUCATION PERSONAL INFORMATION AUGMENTED REALITY
ENVIRONMENTAL ETHICS SOCIAL JUSTICE HEALTH INFORMATION
ARTIFICIAL INTELLIGENCE SUSTAINABLE DEVELOPMENT
PUBLIC HEALTH MENTAL HEALTH PERSONAL DATA
SOCIAL MEDIA REAL TIME CLIMATE CHANGE
BIG DATA
INTERNET OF THINGS
ARTIFICIAL INTELLIGENCE
HEALTH CARE
HUMAN RIGHTS
COGNITIVE ENHANCEMENT
HIGHER EDUCATION
DATA PROTECTION
DATA DRIVEN
PRIVACY ISSUES
NATURAL ENVIRONMENT
HUMAN ENHANCEMENT
INFORMATION SECURITY
CORPORATE SOCIAL RESPONSIBILITY
HEALTH PROFESSIONALS INTERNET OF THINGS IOT

What issues are in focus?

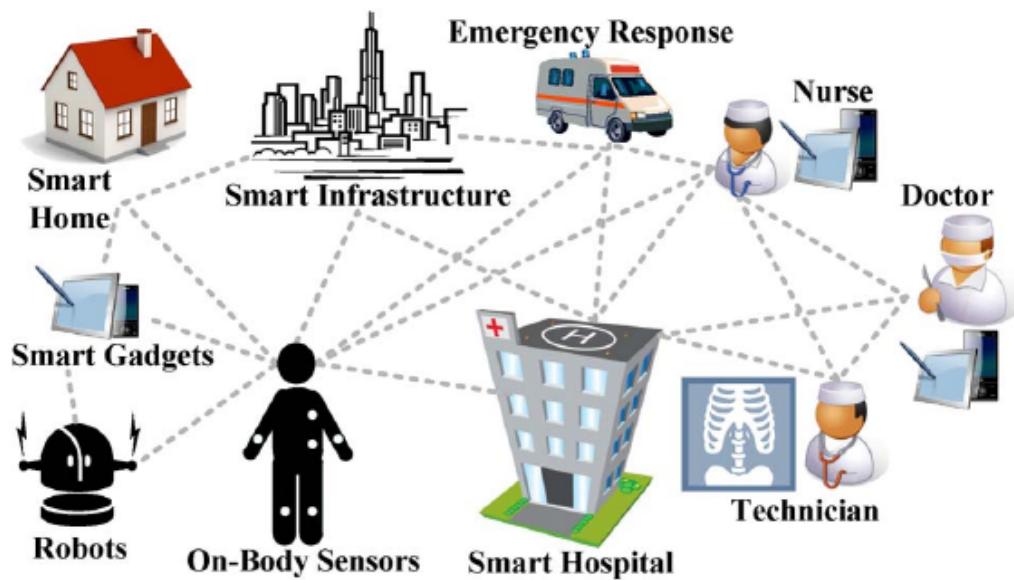
Topic extraction



Example topics and ethical issues



AMBIENT INTELLIGENCE



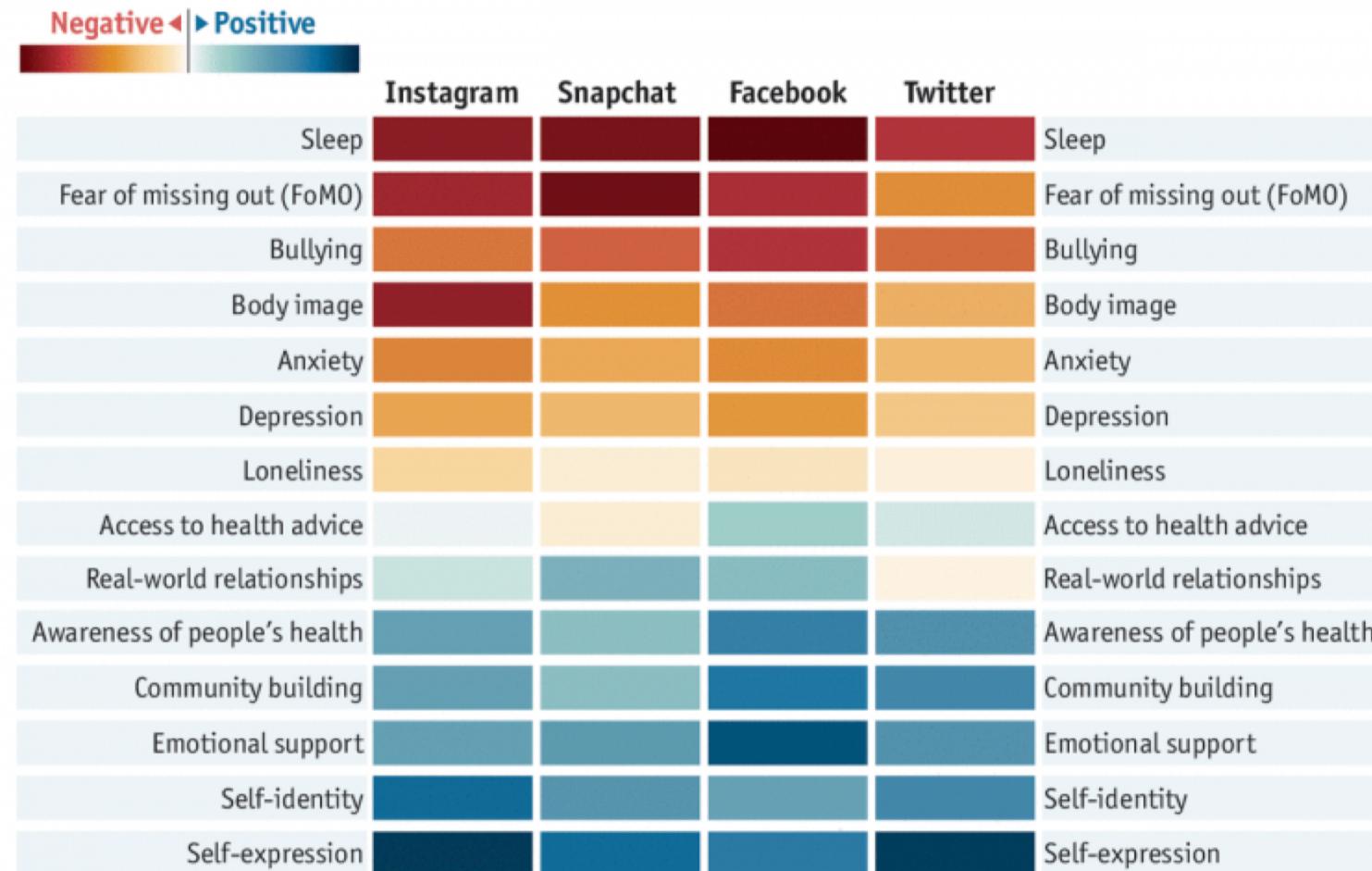
VIRTUAL REALITY



<https://lifesciences.ieee.org/article-archive/technology-spotlight-and-feature-articles/a-survey-on-ambient-intelligence-in-healthcare/>

Like, obsessed

Britain, social media users, 14- to 24-years-old, reported impact on well-being, 2017

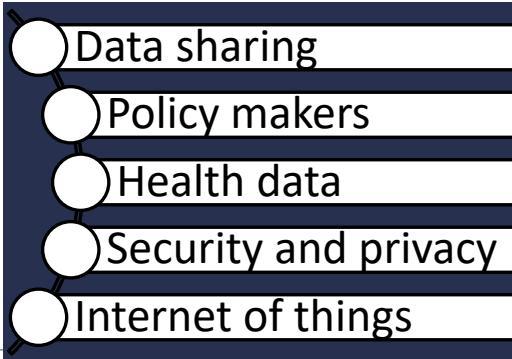


Source: Royal Society for Public Health

Economist.com

<https://www.economist.com/graphic-detail/2018/05/18/how-heavy-use-of-social-media-is-linked-to-mental-illness>



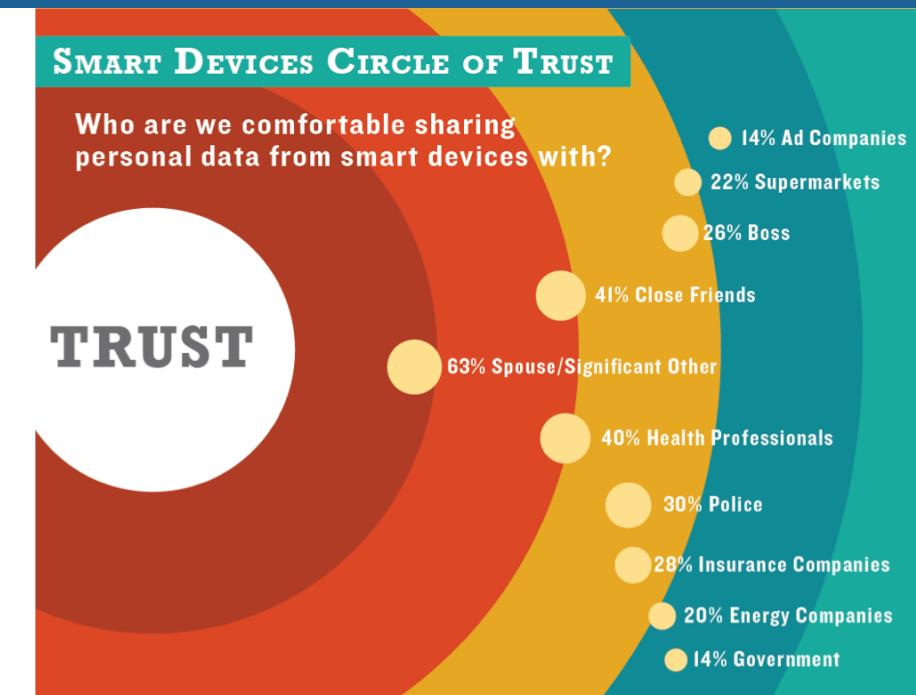


SHARING HEALTH DATA



<https://news.harvard.edu/gazette/story/2019/01/perspectives-on-gene-editing/>

INTERNET OF THINGS



<https://www.trustarc.com/blog/2014/05/29/internet-of-things-industry-brings-data-explosion-but-growth-could-be-impacted-by-consumer-privacy-concerns/>

Original Paper

The Impact of Search Engine Selection and Sorting Criteria on Vaccination Beliefs and Attitudes: Two Experiments Manipulating Google Output

Ahmed Allam¹, MSc; Peter Johannes Schulz¹, PhD; Kent Nakamoto², PhD

¹Institute of Communication and Health, Faculty of Communication Sciences, University of Lugano (Universit
Switzerland

²Marketing Department, Pamplin College of Business, Virginia Tech, Blacksburg, VA, United States

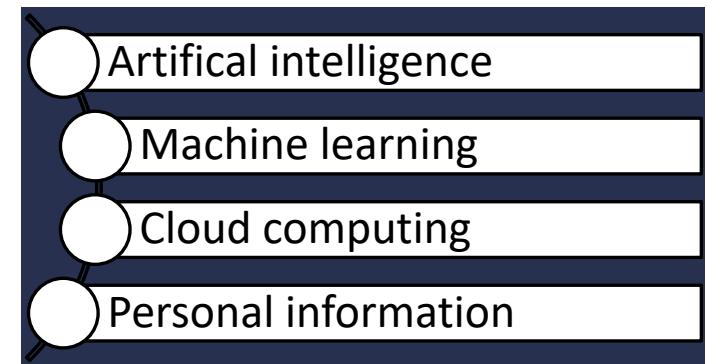
Typing in a neutral search term,
such as ‘vaccination’, gives results
for anti-vaccine propaganda.
Photograph: YouTube



vacci

vaccines revealed
vaccine
vaccinated vs unvaccinated
vaccination for children
vaccines are toxic
vaccine injury
vaccines for babies
vaccine injury before and after
vaccination the silent epidemic

<https://www.theguardian.com/media/2019/feb/01/facebook-youtube-anti-vaccination-misinformation-social-media>

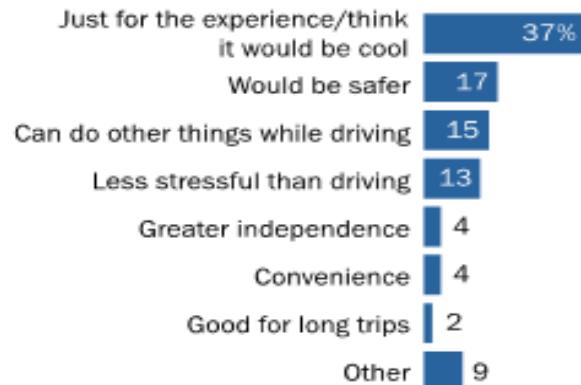


Slight majority of Americans would not want to ride in a driverless vehicle if given the chance; safety concerns, lack of trust lead their list of concerns

% of U.S. adults who say they would/would not want to ride in a driverless vehicle



Among those who say **yes**, % who give these as the main reasons

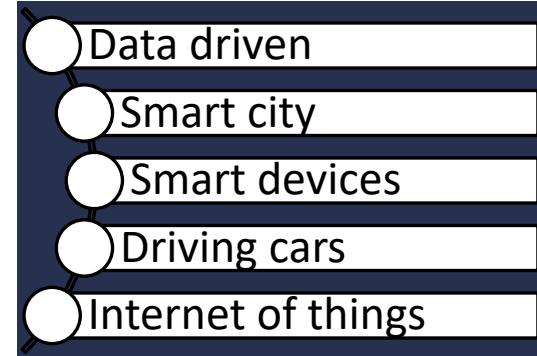


Among those who say **no**, % who give these as the main reasons



Note: Respondents who did not give an answer are not shown. Verbatim responses have been coded into categories; figures may add to more than 100% because multiple responses were allowed.

Source: Survey conducted May 1-15, 2017.
"Automation in Everyday Life"



What Happens to American Myth When You Take the Driver Out of It?

The self-driving car and the future of the self.

By Robert Moor

<http://nymag.com/intelligencer/2016/10/is-the-self-driving-car-un-american.html>

Various, but not coordinated efforts have been taken in relation to smart technologies' ethics → the need for a coordinated and unified approach.



[NanoEthics](#)

December 2009, 3:231 | [Cite as](#)

Ambient Intelligence and Persuasive Technology: The Blurring Boundaries Between Human and Technology

Authors

Peter-Paul Verbeek

Authors and affiliations

[Ethics and Information Technology](#)

December 2010, Volume 12, Issue 4, pp 313–325 | [Cite as](#)

“But the data is already public”: on the ethics of research in Facebook

Authors

Michael Zimmer



[Computer Law & Security Review](#)

Volume 28, Issue 2, April 2012, Pages 184-194



[Ethical Theory and Moral Practice](#)

November 2016, Volume 19, Issue 5, pp 1275–1289 | [Cite as](#)

The Ethics of Accident-Algorithms for Self-Driving Cars: an Applied Trolley Problem?

Authors

Sven Nyholm , Jilles Smids

Authors and affiliations

Commentary

Big Data ethics

Andrej Zwitter



Big Data & Society
July–December 2014: 1–6
© The Author(s) 2014
DOI: 10.1177/2053951714559253
[bds.sagepub.com](#)



Conclusions

- Smart technology has become **pervasive and abundant**, and it has become evident that it impacts various aspects of **human well-being**.
- **Unintended consequences** occur, that are generated by the smart technologies.
- In order to assure the **economic, societal and environmental sustainability**, smart technology needs to be implemented using **ethical principles**.

„Responsible leaders, including acclaimed scientists, should exercise greater **humility** to the **complexity and inherent uncertainty** of their activities and strive to seek out and challenge hubristic behaviors.”



Diamandis, E. P., & Bouras, N. (2018). Hubris and sciences. *F1000Research*, 7.