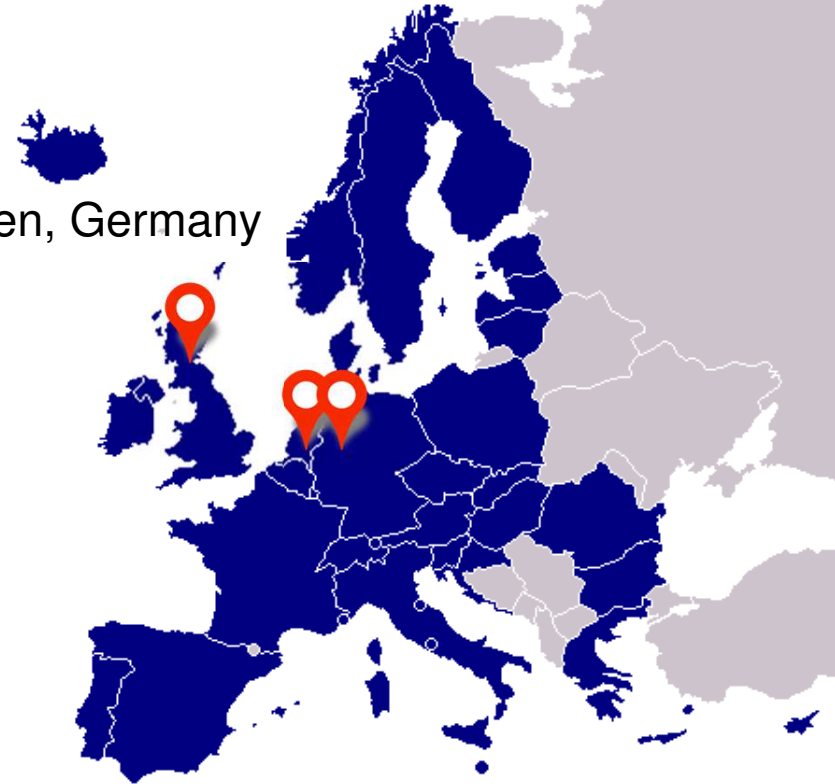


Acceptance and Perception of Artificial Intelligence (AI) in Health-Related Contexts

ESR 3. **Alexander Hick**
RWTH Aachen, Germany

- 25 yrs. old & German,
working at the Chair of Communication Science at RWTH Aachen, Germany
- **BSc in Cognitive Neuropsychology & Statistical Research Methods,**
Tilburg University, NL (2020)
- **MSc in Philosophy of Mind & Computational science,**
University of Edinburgh, GB (2021)
- Interest in how technological innovations,
in particular AI, shape healthcare and medicine.



Acceptance of AI in health-related contexts

- **Why?** Acceptance is multifaceted variable and highly dependent on perception of e.g., AI
- **What?** Perception, attitudes, and associations regarding AI based AAL-technologies
- **Who?** Various target groups, including old & frail people, handicapped people, the general public & medical personnel
- **Where?** AI based AAL technologies, wearable or ambient-installed sensors in the context of home, health care, and hospitals
- **How?** Assessment of the perception, attitude, and acceptance of AI based AAL-technologies



- **Goals**

- Collection of knowledge, associations and attitudes towards AI
- Development of acceptance scale for AI
- Holistic framework of user and context requirements



- **Relevance**

- Need for acceptance cartography for AI
- User perspectives in the development of AAL-technologies
- Implementation in all sectors of society

ACCEPTANCE

(Technology) ACCEPTANCE

- Peek et al., (2014) – Acceptance consist of 27 factors
 - These factors can be divided into 6 overall themes
 - 1. Concerns
 - 2. Expectations
 - 3. Need
 - 4. Alternatives
 - 5. Social Influence
 - 6. Characteristics of users

(Technology) ACCEPTANCE

- Venkatesh & Davis, (2000)
- **Acceptance** as user **adoption** behavior
- Adoption based on (*among other factors*):
 - **Perceived usefulness**
 - **Perceived ease of use**

PERCEPTION

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- Fast & Horvitz, (2017)
 - “*Long-Term Trends in the Public Perception of Artificial Intelligence*“

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 - “[...] (g)eneral interest, awareness, and discussion about AI has waxed and waned since the field was founded in 1956.”

PERCEPTION

- Fast & Horvitz, (2017)
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 - “*We find that discussion of AI has increased sharply since 2009, and that these discussions have been consistently **more optimistic than pessimistic.***“

PERCEPTION

- Fast & Horvitz, (2017)
 - “*Long-Term Trends in the Public Perception of Artificial Intelligence*“
 - “[...] (g)eneral interest, awareness, and discussion about AI has waxed and waned since the field was founded in 1956.”
 - “We find that discussion of AI has increased sharply since 2009, and that these discussions have been consistently more optimistic than pessimistic.”
 - “However, when we examine **specific concerns**, we find that worries of **loss of control of AI, ethical concerns for AI, and the negative impact of AI on work** have grown in recent years.”

WHAT IS AI?

WHAT IS AI?

“Artificial
Intelligence”

WHAT IS AI?

“Machine learning”

“Artificial
Intelligence”

WHAT IS AI?

“Machine learning”

“Artificial
Intelligence”

“Statistics”

WHAT IS AI?

“Robots“

“Artificial
Intelligence“

“Terminator“

“Machine learning“

“Statistics“

WHAT IS AI?

“Robots”

“Autonomous cars”

“Terminator”

“Artificial Intelligence”

“Machine learning”

“Statistics”

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WHAT IS AI?

“Robots”

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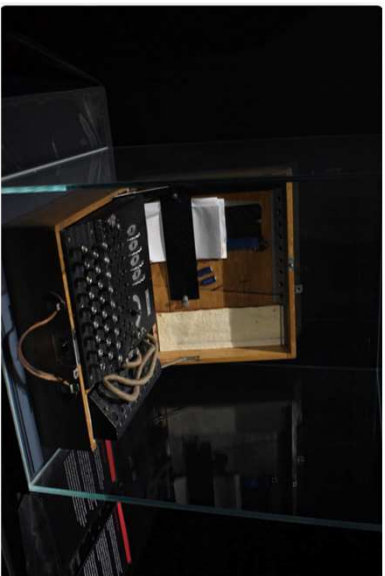
“Machine learning”

“Pattern recognition”

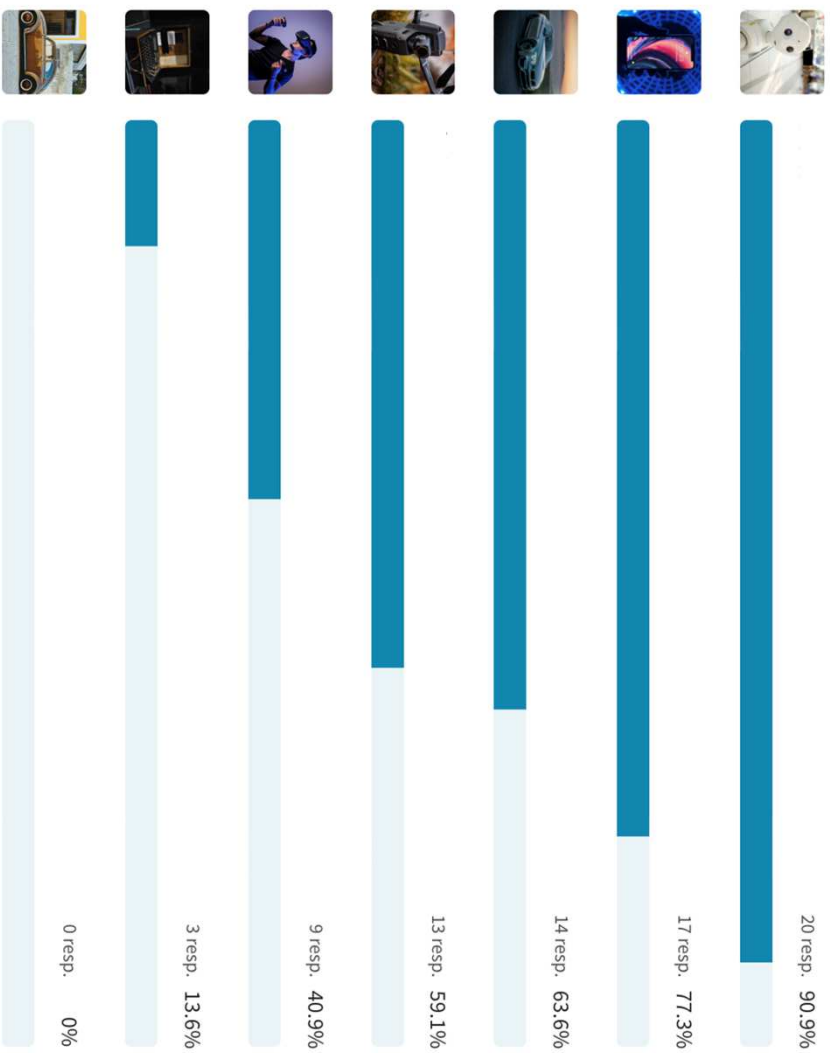
“Statistics”

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WHAT IS AI?



WHAT IS AI?



WHAT IS AI?



WHAT IS AI?

- AI is a **term** coined by a group of computer scientists at the Dartmouth workshop on Artificial Intelligence
(McCarthy, Minsky, Rochester & Shannon, 1955)
- Refers **to the ability** of a computer to perform actions commonly associated with human intelligence
(Copeland, 1993)
- AI is the field of science in which we develop **technologies** that display certain cognitive tasks in an intelligent manner
(Murphy et al., 2021)
- An essential feature of AI is large amounts of **data** with which **algorithms** can be trained in various desired (or undesired ways)
(Jobin, Ienca & Vayena, 2019; Chen et al., 2020; European Commission, 2021).

A Qualitative Approach to the Public Perception of AI

- Semi-structured interviews were conducted
 - N=32
 - Mean age: 43 years
 - Age range: 23-83
 - 17 females & 16 males
 - The **research aim**:
 - What do people **know** about AI?
 - What **contact** do people have with AI?
 - What do people **expect** of AI?

A Qualitative Approach to the Public Perception of AI

- The interview guideline was based on existing literature
- It included:
 - **open-ended questions** and **specific questions**
 - Items about AI
 - **What AI can do vs. What AI should do?**
- Semantic differentials
- Metaphors

A Qualitative Approach to the Public Perception of AI

- The interviews were **audio-recorded** and subsequently **transcribed**
- The transcripts were **thematically analysed** using MAXQDA18
- Common **themes** included:
 - Loss of control (over AI)
 - Privacy issues
 - Data privacy issues
 - Advantages & Disadvantages of AI
 - Differences between AI and non-AI technologies

A Qualitative Approach to the Public Perception of AI

Dystopian views

- Some indicated “exaggerated“ fears about losing control over AI i.e., the **Terminator scenario**

Utopian views

- Others, unrealistic expectations about AI’s abilities e.g., AI as the **perfect tool**

A Qualitative Approach to the Public Perception of AI

Dystopian views

“It should definitely not be able to program itself! Power of the machines and whatnot...If you have watched Terminator, you surely wouldn't want that. If it is intelligent and develops a personality with own interests like: “I do not like asparagus“, for example...this would be a problem.”

Utopian views

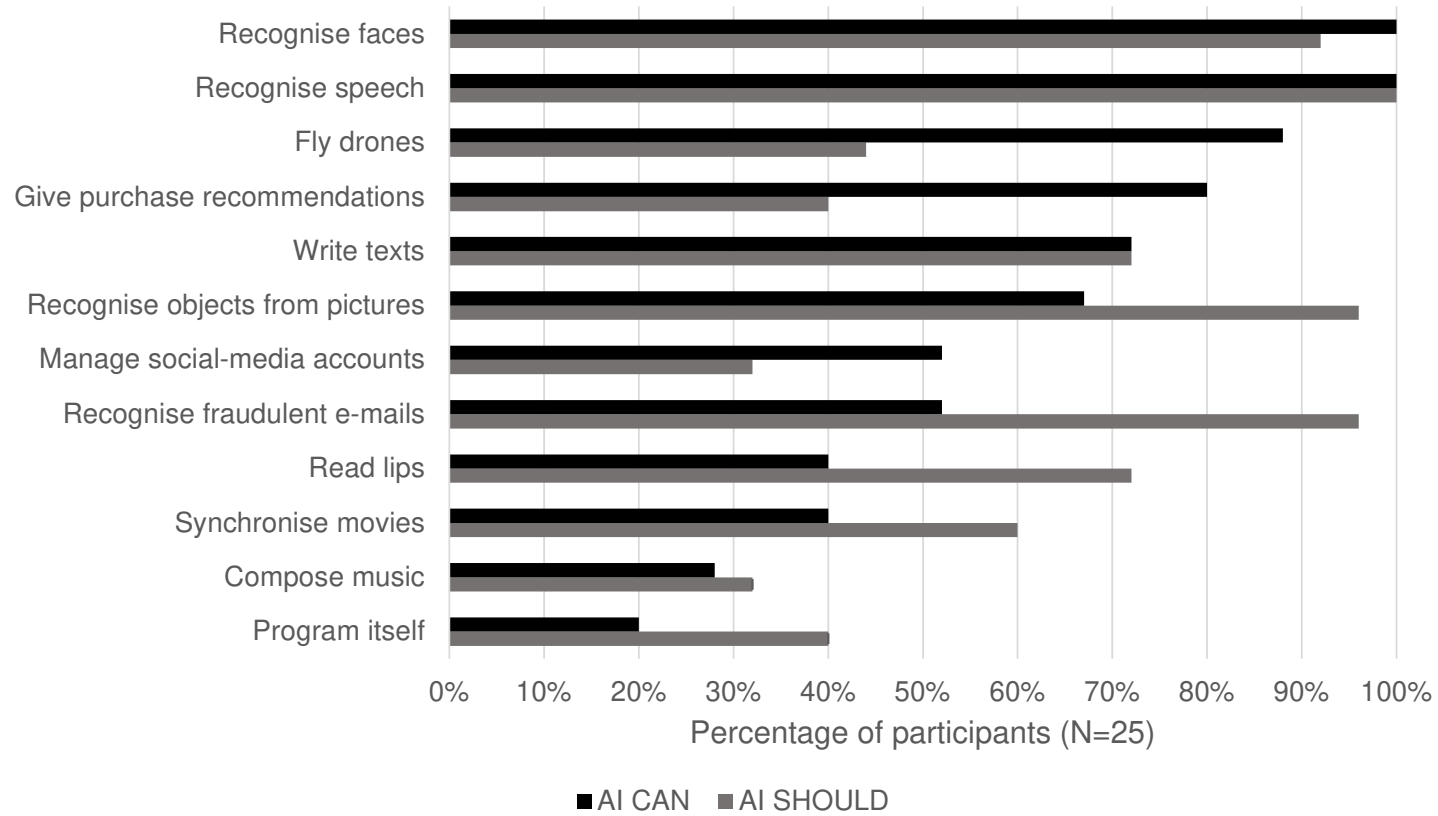
“Well, an AI can do it perfectly. Something humans can't...it's what it is. These many facets could not be represented by the human mind, let alone summarised in such a way that gives you a perfect output...evidently...humans can't“

A Quantitative Approach to the public perception of AI

In addition to the qualitative approach

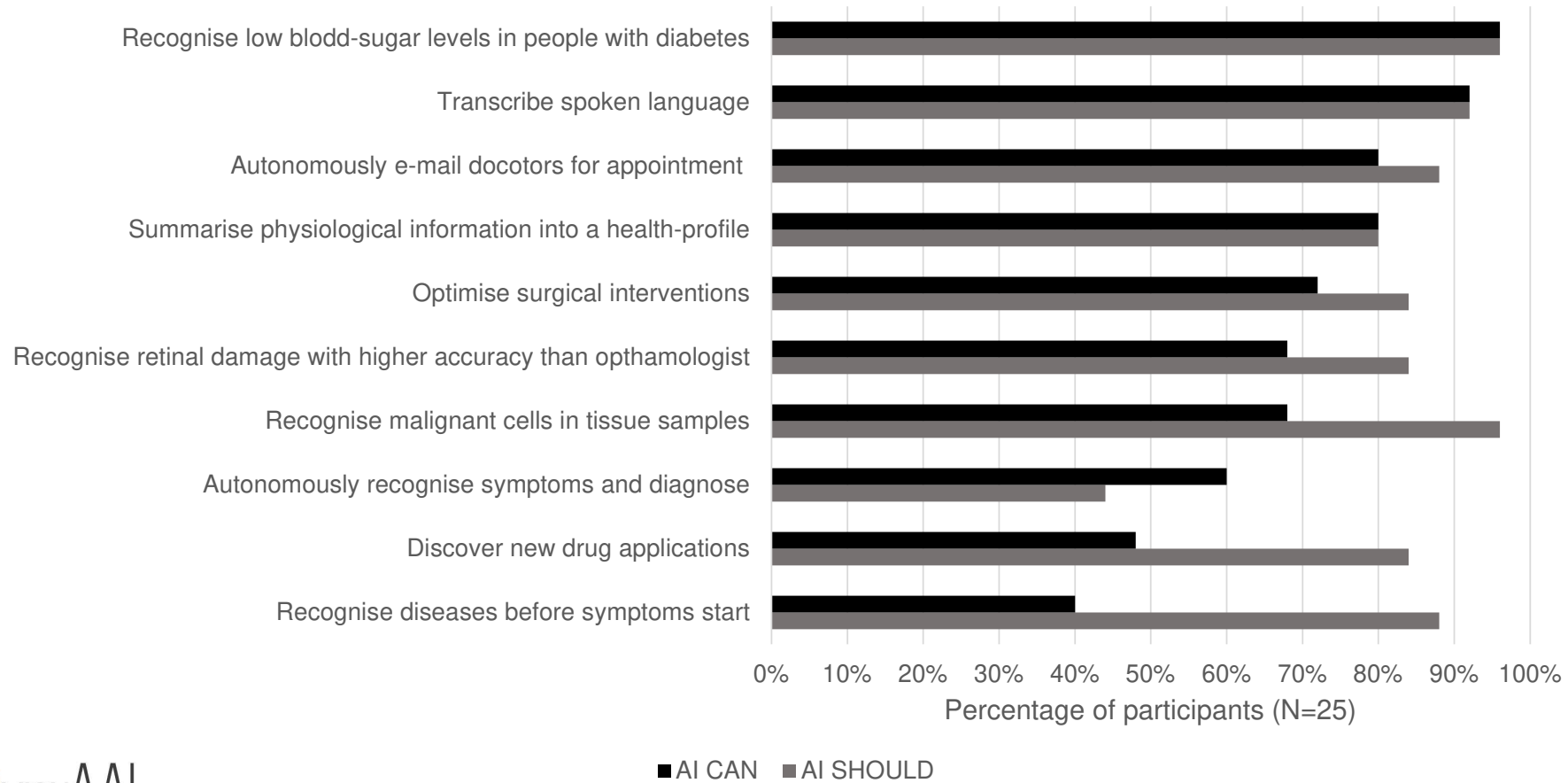
- N=25
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'DEFINITELY CAN' & 'DEFINITELY SHOULD'



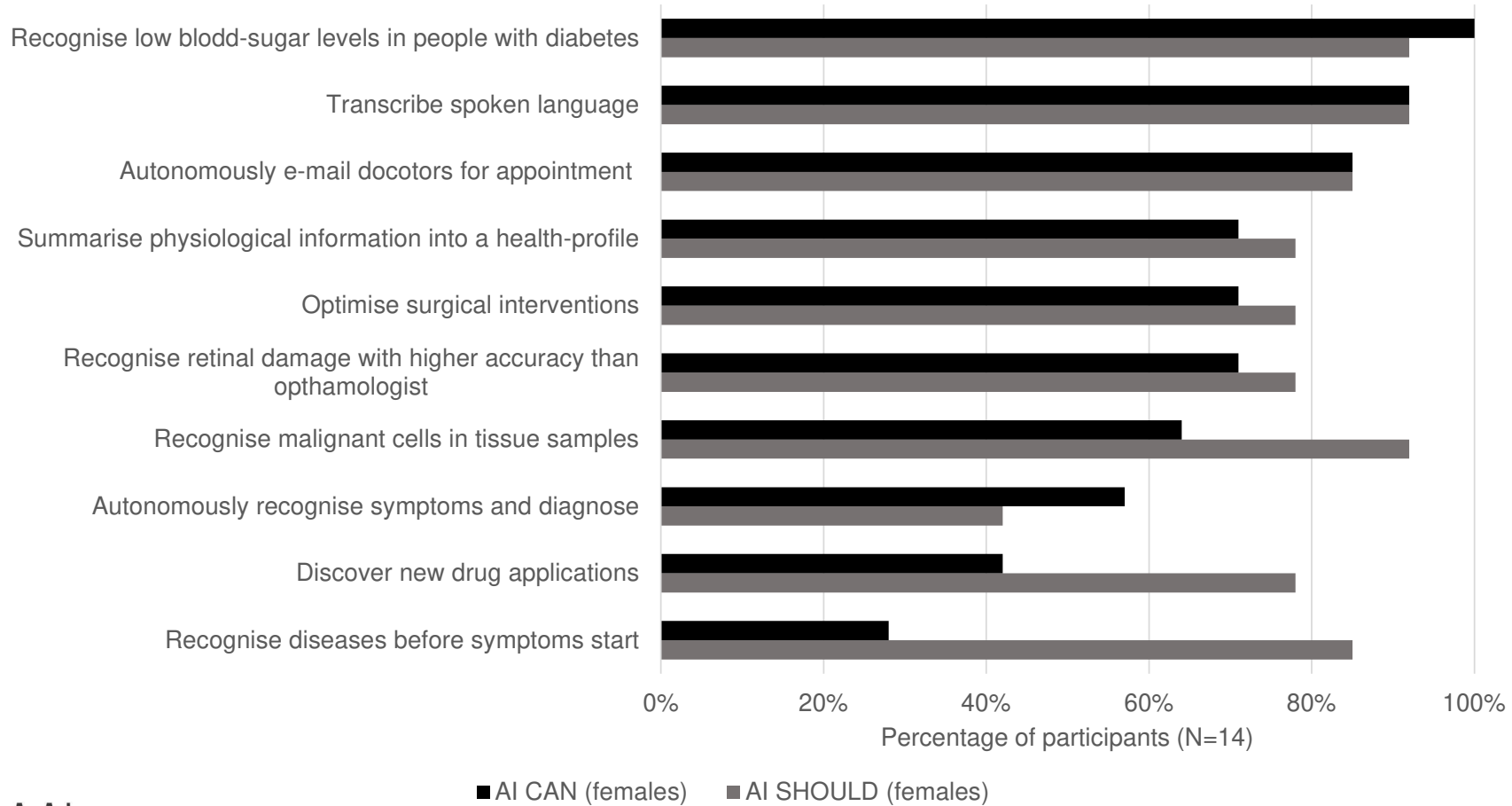
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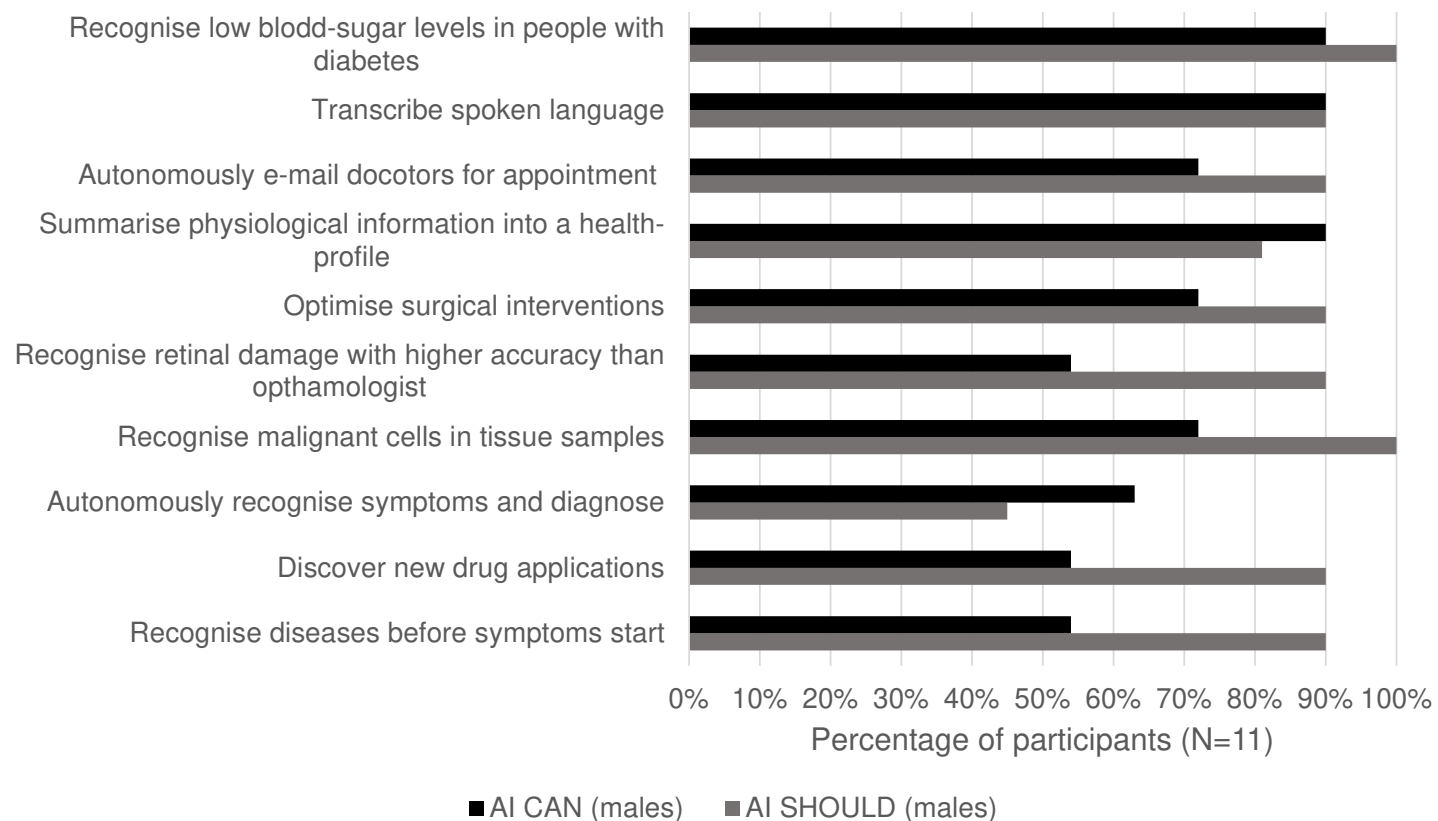
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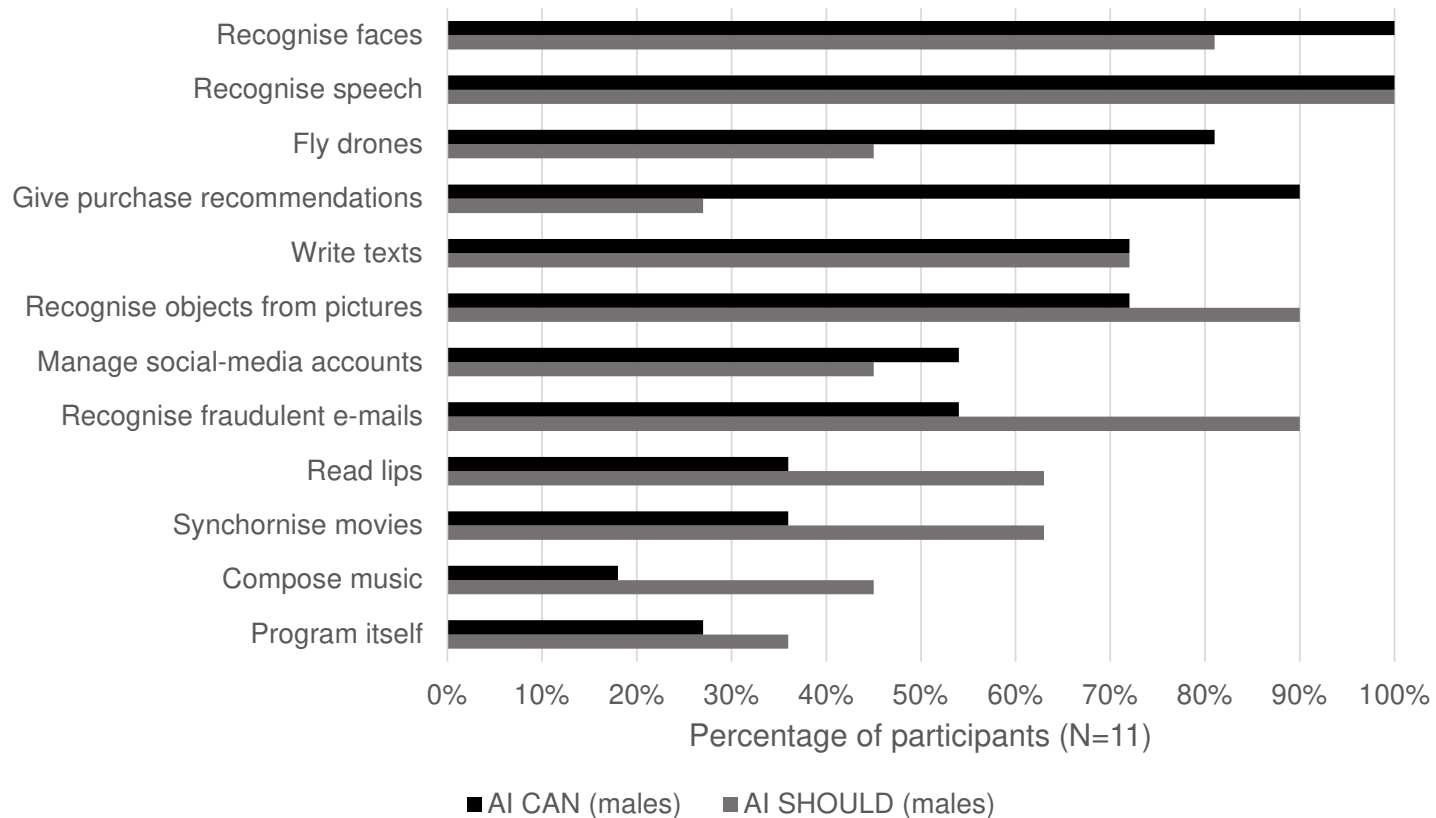
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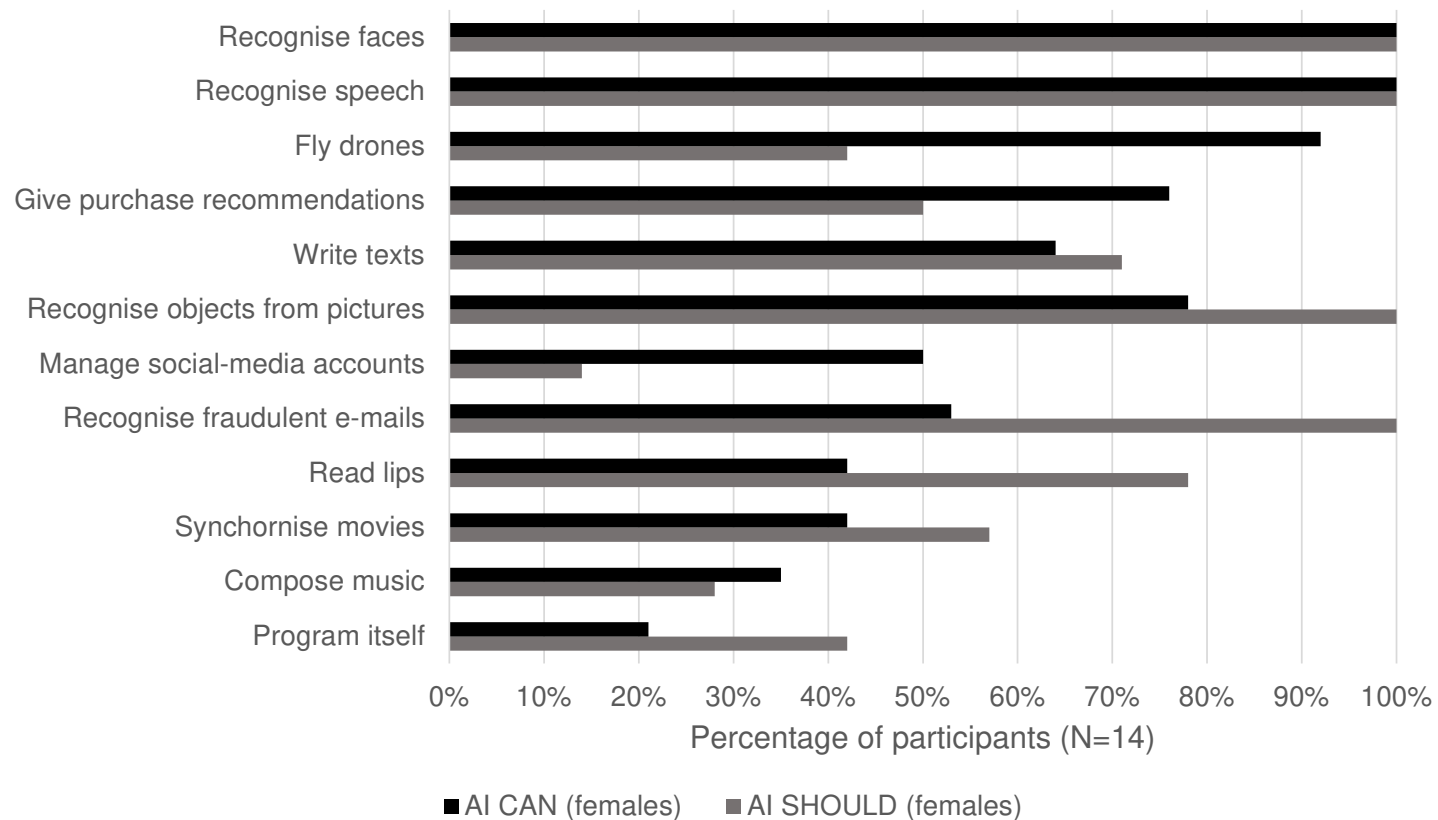
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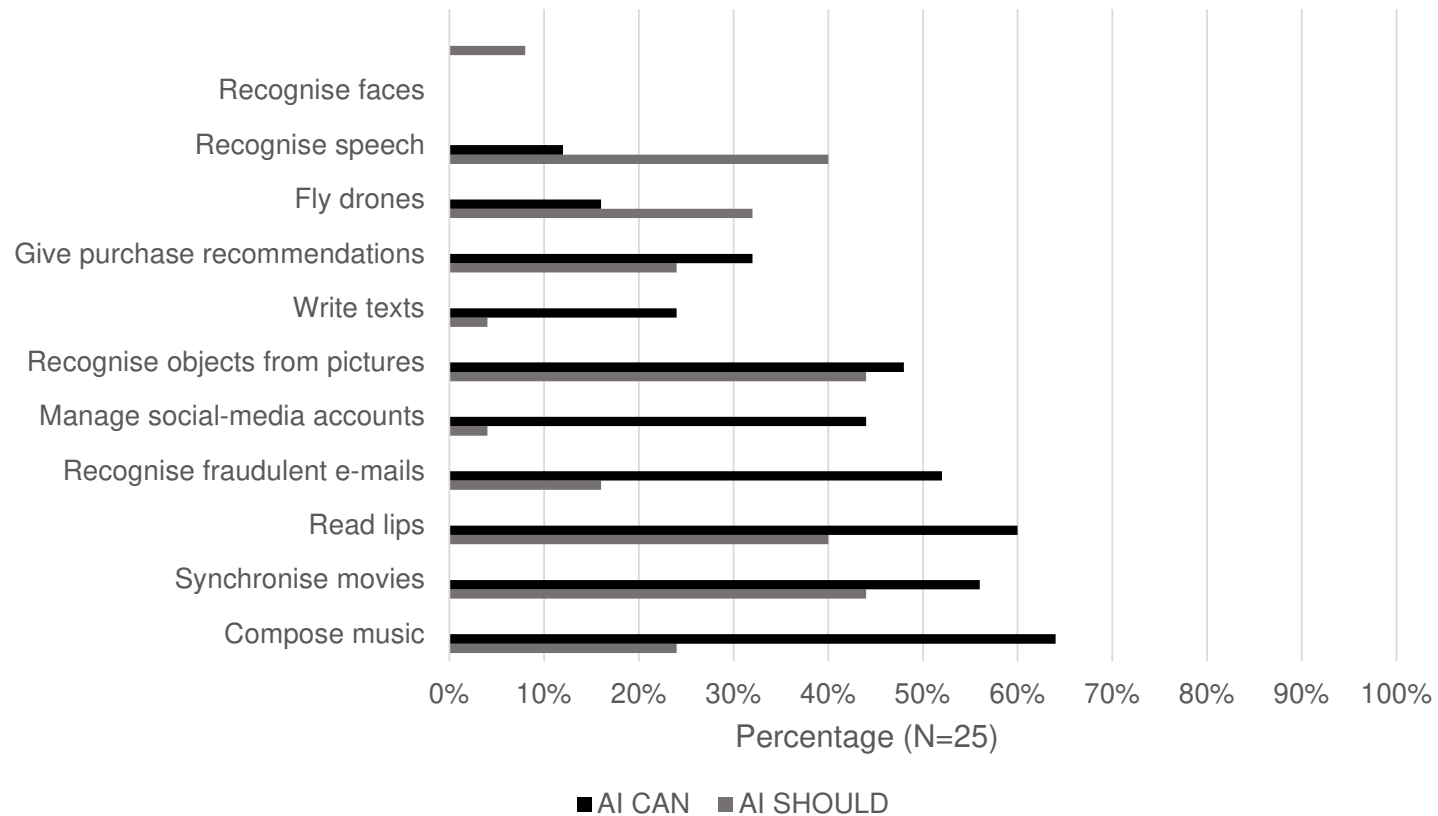
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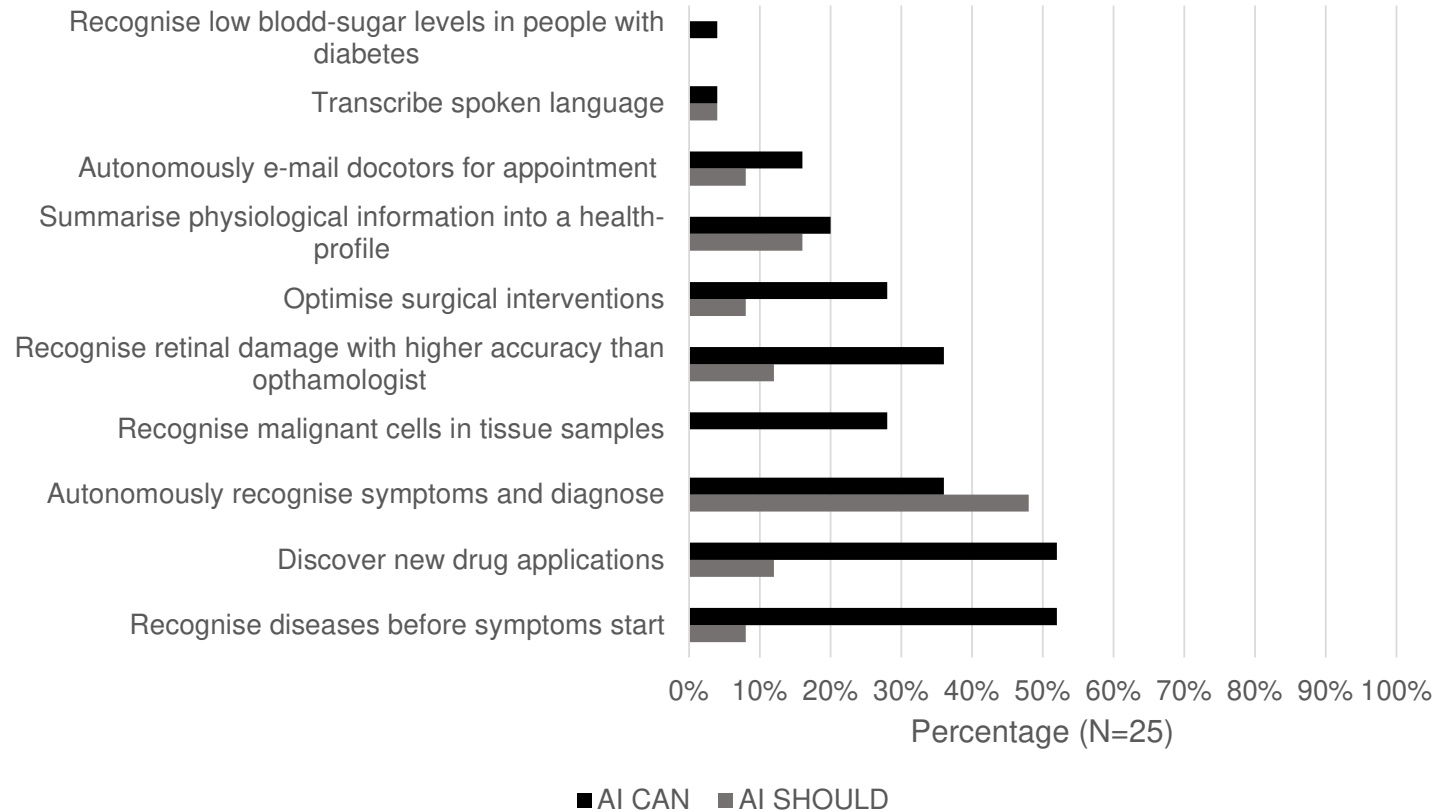
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‘DO NOT KNOW & NOT SURE’



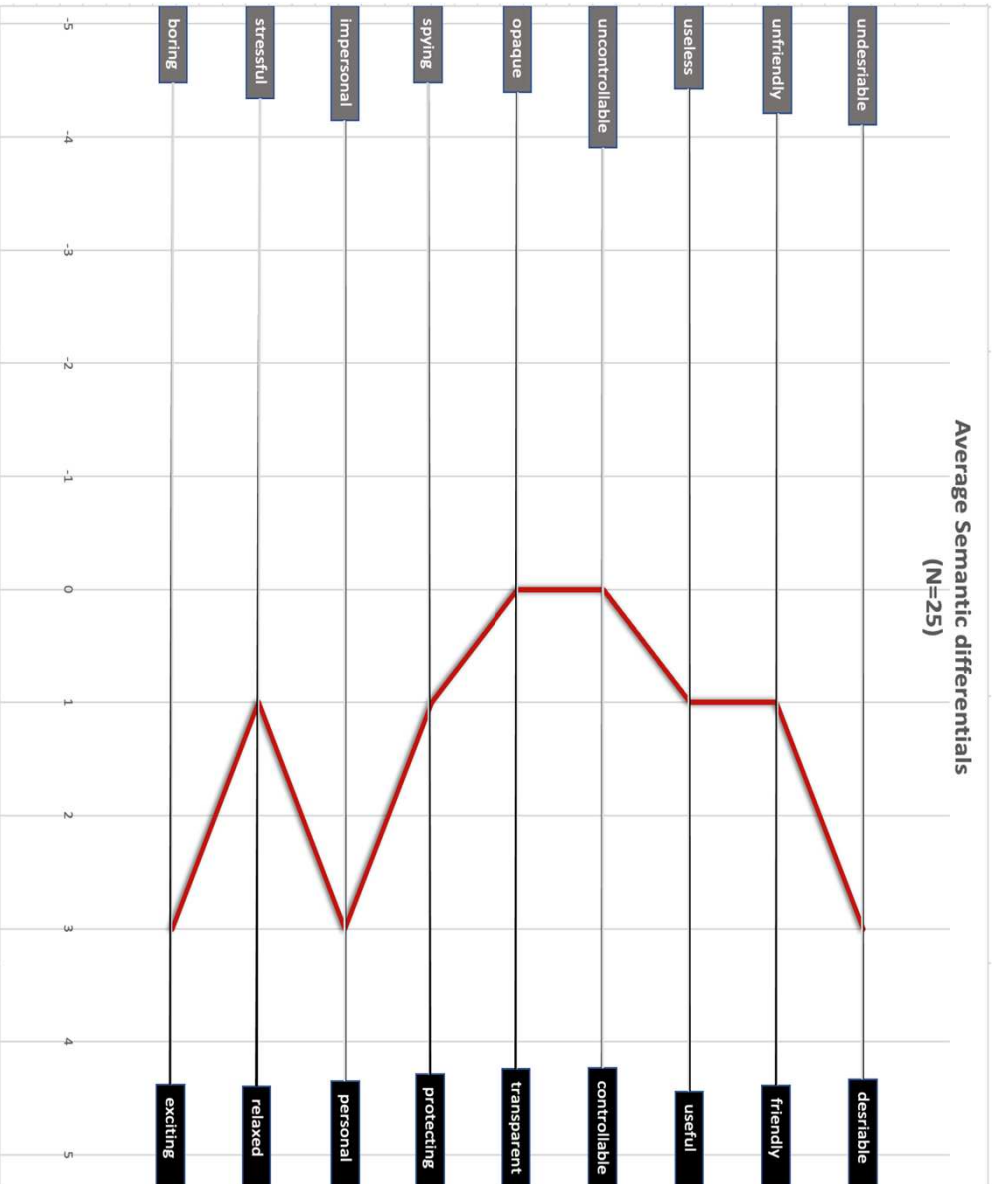
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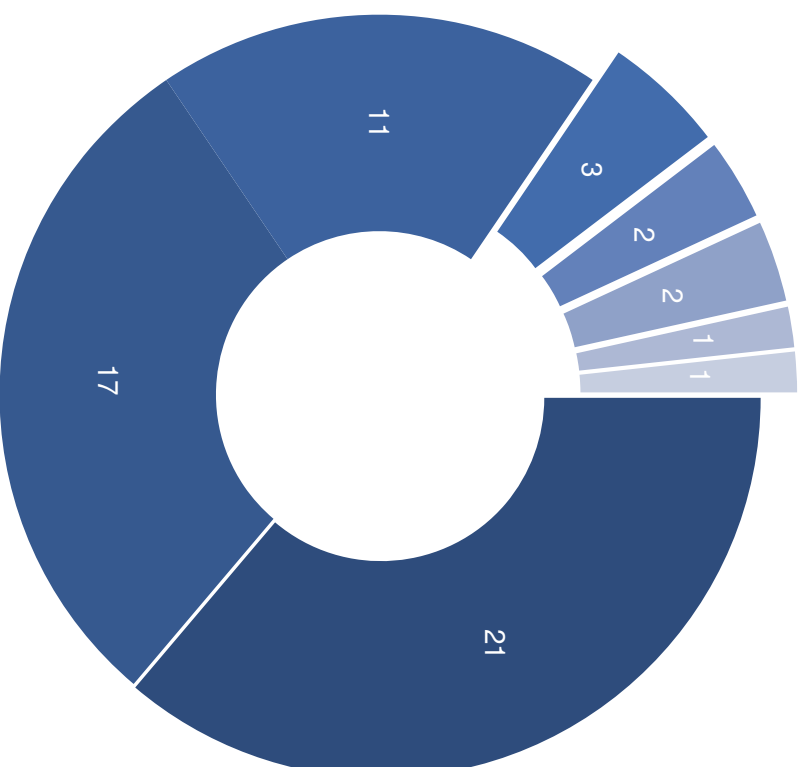


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ESR 3. Alexander Hick – Results



Metaphor Frequencies



- Advisor
- Servant
- Patron
- Guardian angel
- Roommate
- Helper
- Friend
- Ruler

ESR 3. Alexander Hick – Relevance

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 - A set of goals and recommendations for the development and uptake of AI in the European Union.
 - One of its key policy objectives is to ‘ensur[e] that **AI works for people and is a force of good in society**’ (EC, 2021, p.26).

Relevance

- However,...
 - The EC, (also) acknowledges that the general public might **not be able to ‘*fully understand the workings and effects of AI systems*’**
(EC: AI ethics guidelines, 2021, p.23, brackets and emphasis added)

So?

Where to go from here?

Why would people accept AI?

Where to go from here?

First, people must know something exists to accept it!

Where to go from here?

Second, the technology has to be **useful**, **easily accessible**, and **provide an addition** to an otherwise less efficient type of work

(Venkatesh & Davis, 2000; Venkatesh et al., 2003; Peek et al., 2014)

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**usefulness,
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 - This is the **first step** in the development of an **acceptance cartography**
 - Future studies need to take **other variables, different stakeholders**, and **additional contexts** into account

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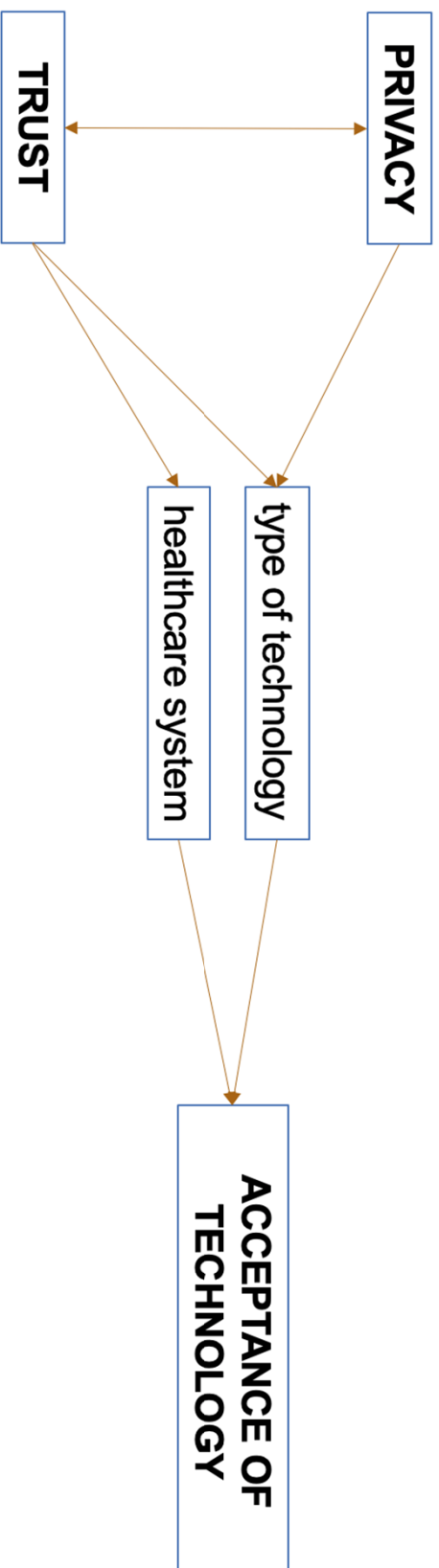
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 - In **different contexts**
 - With **different AI-based technologies**



“In considering any new subject, there is frequently a tendency, first, to overrate what we find to be already interesting or remarkable; and, secondly, by a sort of natural reaction, to undervalue the true state of the case, when we do discover that our notions have surpassed those that were really tenable.

(Lovelace about Babbage’s Analytical Engine, 1843, p. 284)“



Thank you
for your
attention 😊

Open Questions?