Public Perception of AI-based Services

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***Abstract*—In recent years, there has been substantial development in artificial intelligence (AI), giving rise to fast-paced adoption in several industries and key companies. Consequently, numerous services used by the public today are built leveraging AI technology. The delivery of day-to-day services such as recommendation systems, customer support services, and even some aspects of healthcare have notably shifted towards AI-based systems. As a result understanding the public perception of AI is crucial to maintain solutions that prioritize human needs. This paper discusses the results of a survey aimed at assessing the public perception of AI conducted with 50 participants. The questions are related to participants awareness and knowledge of AI-based services, their inclination towards interacting with such systems, and the factors that influence participants' perception of AI-services. Our findings reveal distinct preferences among participants regarding the integration of AI into specific tasks. While some tasks are perceived to be suitable for AI due to their data-driven nature, others are regarded as tasks that need human interaction, particularly those involving human connection. Most participants share the public consensus that there needs to be regulations and frameworks over the implementation of AI. These results highlight the significance of AI governance in addressing society concerns and anxieties related to AI services. As part of our open questions, we can analyze the scenarios in which participants' worries about AI might make them avoid certain AI-services. The incorporation of AI in services that have yet to adopt this technology will require to address these society needs, trust and anxieties.**

***Index Terms*—Public Perception, Social and professional topics, Artificial Intelligence, Human-centered computing, Social presence, Technology adoption**

I. Introduction

Artificial intelligence (AI) has become a key player in society today [1], [2]. The extensive integration of AI in various aspects of daily life extends to different applications across different domains. As a result, it is not surprising that advancements in AI influence society, and societal and technological progress are often interconnected [3]. These systems have gone past what we could only imagine in science fiction movies to more practical everyday uses [4]. According to Mckinsey, 25% of companies have Generative AI (GenAI) on their boards' agendas and 40% of companies are planning to increase their investments in AI in their day-to-day operations [5].

Currently, AI is used in different services: from our personal devices to critical sectors like healthcare and finance. Examples of AI-driven services we may use in our daily lives include recommendation systems such as Netflix, Spotify, YouTube Music; Virtual Assistants like Apple's Siri, Amazon's Alexa; Online Customer Support Live chats powered by AI Chat-bots. These innovations not only redefine how individuals access and discover media [6], [7] but also introduces a unique way of engaging with new technologies that convey human-like attributes [8].

Public opinion plays an important role in shaping the trajectory of AI development, influencing public adoption, commercial development, research funding and regulatory frameworks [9]. Since the more explicit introduction of AI in 2015, there has been a shift in the public opinion of it. Despite the promise of AI development, there are also concerns on how AI is used in sensitive fields like healthcare, where concerns regarding data privacy and biases in treatment decisions persist [10].

This raises the question on how society perceives this abrupt change in the delivery of services we receive and how AI is slowly being integrated in different aspects of our lives, often without prior consent on our preference to receive services from AI or a human agent. With the wide adoption of AI, it is important more than ever to emphasize human-centered design of these AI solutions. There have to be guidelines and policies in place to ensure that these products are built with humans at the center.

To show the relevance of creating AI services with a human-centric design, we conduct a survey about the public perception of AI. First, we are interested in the participants' general knowledge about AI-services. Additionally, we build a list of scenarios in which participants will evaluate how willing they are to interact with an AI-system or if they would prefer human-interaction for that particular task. Lastly, through open questions we investigate what are the key factors that influence participants' willingness or reluctance to receive AI-services for these scenarios. With this in mind, in this study we address three research questions:

RQ1: What do people already know about AI-based systems and services?
RQ2: To what extent are people willing to interact with AI-based services in comparison to human interaction?
RQ3: What key factors influence people's perception of AI-based services?

In what follows, we explain our methodology in section 3 and the results in section 4; discussion is then in section 5; and reflection is in section 6, followed by a brief conclusion.

II. Literature Review

Recently, Kelly et al. [9] conducted a survey of public opinion of artificial intelligence over 8 countries and six continents. Overall the respondents believe AI will drive innovation, but there are concerns regarding privacy, job loss and harm to personal relationships. Regarding job loss, Wirtz et al. [11] suggests that there could be measures taken by the public sector, like transparency regarding the potential consequences that AI may bring to their social, working and personal environment.

Fast et. al analyzed the views related to AI in the New York Times over a 30-year period and found that the discussion on ethical concerns of AI has raised sharply since 2015 [12]. A survey conducted by Mozilla regarding the public perception of AI studies what people think about AI [13]. They found that young people are not nearly as concerned about AI as everyone else, and most people want AI to be smarter than them. Cave et. al conducted a study on public perception made in the UK asked participants on eight common narratives about AI, both positive and pessimistic [14]. They found that the population of their study has a negative view on AI: levels of concern were on average higher than excitement.

Yigit et. al [15] explored people's preferences regarding the application of AI in public services and the challenges of the governments to adopt AI and proper governance in Australia and Hong Kong. Despite finding public perception differences between both countries, there was a minimal gap regarding government AI adoption challenges. Wuenderlich et. al found that for services that need high credence qualities like banking, the users need more authenticity when interacting with chat-bots that provide these services. This is different from other services that might be only for search purposes, like e-commerce [16].

Fui et. al [17] discuss the particular challenges of GenAI in society, defining empathy and human needs as key factors in the adoption of AI. There is also need for its transparency, explainability and governance. Daley et. al [1] question if existing legal frameworks are sufficient to govern the usage, development and distribution of AI. Kelley et. al [18] conducted a survey to understand how and why people believe AI will affect privacy. 49% of respondants mentioned they would have *"less privacy"* due to AI over the next 10 years.

Schwesig et. al [19] investigate the association of risk and opportunity perception of AI with people's willingness to use this technology in 4 areas: Media, Medicine, Phychology and Transport. Their results show that risk-opportunity perception and the context of AI usage predict people's willingness to use AI. Said et. al [20] investigate the influence of people's AI knowledge and confidence in their AI knowledge on AI risk-benefit perception. Their results show that higher confidence in AI knowledge and attitudes towards AI bias people to either overestimate the risks or the benefits. This highlights the need to improve understanding about AI perception of risk and benefit, specially of people who play an active role in AI policy-making.

III. Methodology

To address our research questions, we conducted an online confidential survey using Google Forms. The survey link was shared across social media platforms including WhatsApp, X(ex. Twitter) and LinkedIn. The survey had 30 participants whose personal information was not saved.

The survey consisted of 34 questions in total; 21 were optional and 13 compulsory. Out of the 34 questions, 31 were multiple-choice questions and 3 open-ended. We also made use of Likert scales for 24 out of the 31 multiple-choice questions. Questions utilising the Likert scales were used to measure how knowledgeable or how willing the participants were for a certain scenario. Table I shows our definitions of each number in the scale.

All survey questions can be found in Appendix 3. The survey form and recruitment posts for the survey can be found in Appendix 4.

TABLE I
Likert scale

No.	"How Knowledgeable"	"How willing"
5	Very Knowledgeable	Most Likely
4	Knowledgeable	Likely
3	Moderately Knowledgeable	Neutral
2	Somewhat Knowledgeable	Unlikely
1	Not Knowledgeable	Less Likely

For *"How Knowledgeable"*, we only consider 5, 4, 3, & 2 as being a positive measure. We consider 1 as Not Knowledgeable. For *"How Willing"*, we consider only 5 & 4 only as positive measures and 2 & 1 as negative ones.

We ask questions to understand the demographic distribution of our participants. But we only assess their age group, profession and sector in which they work if employed. The questions are phrased as follows:

- How old are you?
- What's your profession?
- If you are employed, what sector do you work in?

For age, we highlight the following options:

- Less than 20 years
- 21-25 years
- 26-30 years
- 31-40 years
- 41-50 years
- 51-60 years
- 61-70 years
- 71-80 years
- 81-90 years
- 91+ years

For profession, we highlight the following options:

- Employed
- Student
- Student & Employed
- Unemployed

- Retired
- Other

For the sector they worked in if employed, we highlight the following options:

- Agriculture
- Education
- Technology
- Finance
- Other (with an option to specify what sector)

To understand the public opinion regarding AI-systems, we are guided by the following research questions:

RQ1: What do people know about AI-based systems and services?
We ask participants first how familiar they are with AI-based systems. We are interested in their awareness of AI in their life, their perception over the environment, and if they think AI will improve our quality of life.
To answer this research question, we pose the following questions to our participants:

- On a scale of 1 to 5, how knowledgeable are you about AI systems?
- On a scale of 1-5, how certain are you that with time, AI systems will evolve to serve civilization and improve quality of lives?
- Do you feel the benefits of AI to society supersede their costs to the environment, i.e physical space, energy consumption, heat dissipation?

RQ2: To what extent are people willing to interact with AI-based services as opposed to fellow human beings?
The core of our study is to figure out in which scenarios participants would prefer to receive services by AI or a human being. Hence, we ask the following questions:

- Do you believe certain tasks or services in your everyday life could benefit from AI or automation?
- Would you prefer to be assisted by a human operator or an AI system in case of emergency situations?
- On a scale of 1-5, if you had the option to get a human operator instead of an AI chatbot, would you be willing to pay more for the service?

To also understand the variance of our participants' willingness to interact with AI-based services as opposed to fellow human beings, we presented 19 different application areas of AI-based services and asked them to indicate how willing they would be on a scale of 1 to 5 for each of those application areas. The different application areas include:

- Finance Information
- Medical Records
- Restaurant Orders
- Funeral Home Arrangements
- Managing Rental Payments
- Fitness/Nutrition Planning
- Mental Health
- Investments advice
- Retirement & Savings
- Education
- Legal Advice
- Real Estate
- Insurance
- Travel Planning
- Personal Shopping/Fashion Advice
- News/Media recommendation
- Environment
- Personal Safety
- Childcare/parenting advice

RQ3: What factors influence people's perception of AI-based services?
Following the scenarios we present participants in RQ2. We also investigate the reasons behind their ranking for the given scenarios. We include questions related to receiving consent before receiving a service from an AI system, and we ask participants if they think there should be government regulations over this technology.
Some of the questions posed to the participants for this RQ include:

- Would you like to be asked for consent before an AI based service is administered on you?
- Do you believe that AI systems can understand and respond to human emotions and needs better than a qualified human professional?
- On a scale of 1-5, to what extent do you feel safe sharing your personal information with AI systems while getting a service from AI?
- Do you feel there needs to be a government oversight, regulations and guidelines to govern the development and implementation of AI technology in human society? If Yes, why
- For the ones that you gave higher scores, why do you think you would prefer to receive the service from AI systems as opposed to receiving them from a human?
- For the ones that you gave lower scores, why do you think you wouldn't trust AI systems to give you these services ?

IV. Results

Demographics

Age: To assess the age distribution of our survey, we asked participants what age groups they fell into across 10 different age groups. The highest population being *21-25 years* (40% of participants). The complete age distribution of the survey can be seen in Figure 1.

Profession: To assess the professions of our participants, we asked two questions. The first being *"What is your profession?"* and the second being *"If you are employed, what sector do you work in?"*. This was important to capture as we know that people's experiences influence their opinions on various topics.

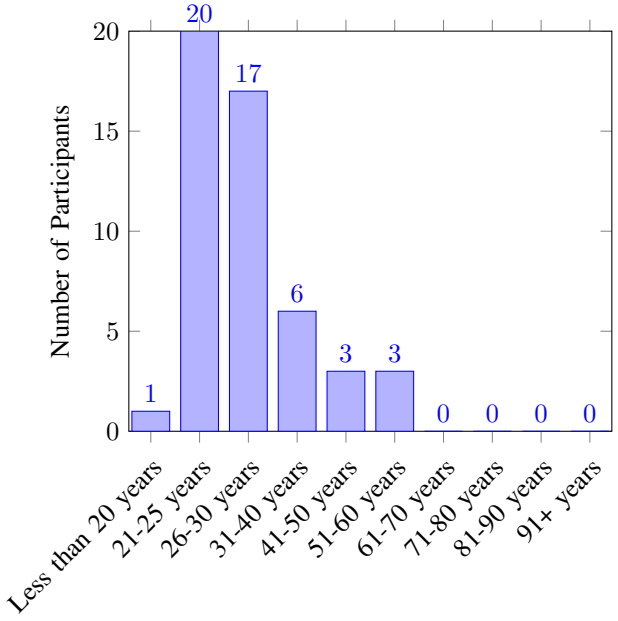

Fig. 1. Age of participants

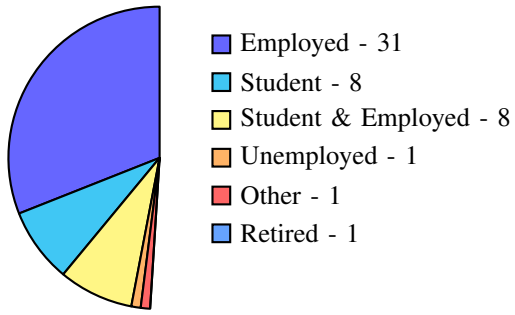

Fig. 2. Employment Status

For the first question, we gave our participants 6 options; *student, employed, student and employed, unemployed, retired* and *other* (with an option to specify what their exact profession is). For the second question, we highlighted 4 sectors (*Finance, Agriculture, Education and Technology*) and an option for participants to specify the exact sector if not available in the options.

For the professions, 39 participants indicated that they were employed (62% of participants). We consider both *"employed"* and *"student & employed"* to be employed. The complete distribution can be seen in Figure 2.

From the 39 participants that are employed, majority (20 participants) indicated that they work in the Technology sector, followed by those in the Healthcare sector (6 participants). The complete distribution of various sectors they work in is seen in Figure 3.

RQ1: What do people know about AI-based systems and services?

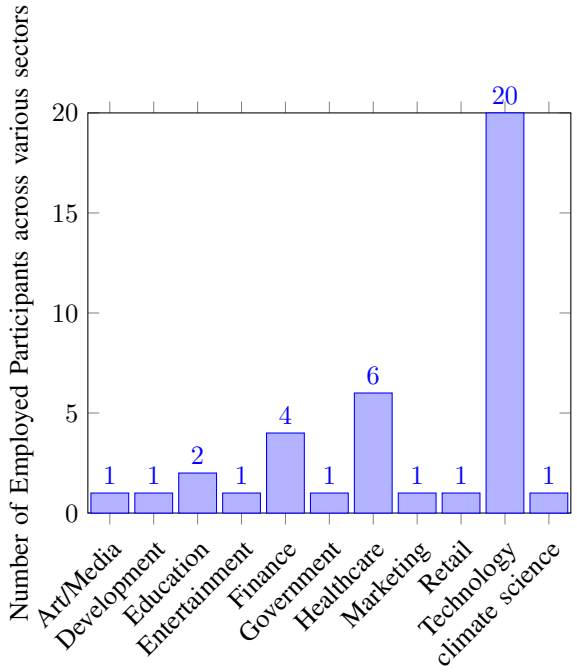

Fig. 3. Number of Employed Participants across various sectors

In this introductory question section, our focus was on understanding fundamental beliefs our audience has on the subject of AI, based upon their personal experiences and level of subject matter expertise.

Starting with first question, we asked how adept they are with the literary knowledge on this topic. Our motivation behind this was to ascertain that our audience sample is well educated on this subject matter and can back their answers to the following questions of our survey with a bias that is well developed through subject matter expertise and not solely based on the common public perception. To our expectations, over 80% of participants indicated that they had some prior knowledge of AI systems, and therefore confirming that the sample audience we picked for our survey was indeed well inform and capable of forming their opinions based on their personal experience and education.

Our second question traversed our audience's mindset towards the future implications of this technology based upon its current direction it is undertaking which is influenced and shaped by governments, legislatures and tech monopolies of our modern times. Our question reflected the fundamental alignment of public perception with the current socio-economic infrastructure shaping AI development.

Our results to the question *"On scale of 1-5, how certain are you that with time, AI systems will evolve to serve civilizations and improve quality of lives"* showed that our audience has an optimistic opinion towards the future developments of AI with 94% positive response albeit of their current hesitance to completely trust AI which is reflected in the later stages of the questioning.

In the concluding question of the RQ1 phase, we considered environmental and ecological affect that modern AI development is causing. As we are aware, these software storing, cleaning, processing and manipulating massive amounts of data need a capable and large hardware infrastructure to sustain their capabilities to serve humanity [21]. Hence our next question asked *"Do you feel the benefits of AI to society supersede their cost to the environment i.e physical space, energy consumption, heat dissipation?"* to which 38% of the participants agreed.

Thus majority of our survey audience inclined towards the growing concern over how the benefits its currently delivering and future promises it is offering may not offer substantial weight over the running costs and energy they consume and adverse effect it causes on the ecological health of our world which is already overwhelmed with the pollution sources from other technology and engineering sectors.

In addition, these findings do coincide with the research publications we inspected and analyzed during our literature review process and publication studies we learned during our coursework such as *"Atlas of AI"* by Kate Crawford [21] and *"Long term trends in the public perception of AI"* published by Fast and Horwitz [12].

RQ2: To what extent are people willing to interact with AI-based services as opposed to fellow human beings?

We asked our participants if they believe certain tasks or services in their everyday life could benefit from AI or automation. 90% of participants selected *"Yes"* and the remaining selected *"Maybe"*. None of the participants explicitly selected *"No"*.

24% of participants indicated that they are likely to pay more to have a human operator offer the service, 42% are neutral and 34% are not likely to.

We asked participants if they would you prefer to be assisted by a human operator or an AI system in case of emergency situations. 52% of participants prefer Human operators, 46% prefer AI systems and 2% indicated that it "Depends on the field".

The application area with the most willingness to use AI-based services was *Restaurant Orders* (88% of participants), then *Travel planning & booking* (82% of participants) and the least being *Childcare/parenting advice* (10% of participants), *Managing Medical Records* (16% of participants), *making funeral arrangements* (20% of participants). The complete distribution can be seen in Figure 4.

Upon further analysis, it was shown that within the 88% of participants that are willing to use AI-based services for restaurant orders, 43% of those participants were between 21-25 years old and 32% between 26-30 years old. The complete distribution can be seen in Figure .

For the 82% of participants that are willing to use AI-based services for Travel planning & booking, 41% of those participants were between 21-25 years old and 32% were between 26-30 years old. 70% were employed.

For childcare and parenting advice, 72% of our participants indicated that they are unlikely to use AI-based services in this application area. 42% of these participants were 26-30 years old and 67% were employed. 47% of these participants had also indicated that they worked in the Technology sector.

For managing medical records, 50% of participants are unlikely to use AI-based services in this application area, only 20% of participants are willing to use them in this application area and the remaining 30% are neutral. Within the 50% of participants that are unlikely to use AI-based services here, 40% are between ages 21-25 and 80% are employed, with 56% working in the Technology sector.

RQ3: What factors influence people's perception of AI-based services?

In this section, we asked participants about the factors that might influence their perception of AI services. These factors include asking for consent before receiving these services, the impression that AI can respond to human emotions, and how comfortable people are sharing information with AI systems.

For example, we asked if they would prefer consent before an AI-based service is administered to them. 84% of participants indicated they would prefer to be asked for consent, 10% are unsure and 6% said they did not. When asked if AI systems can understand and respond to human emotions better than a human professional, 80% of participants said *"No"*, 16% are unsure and the remaining 4% said *"Yes"*.

Another key aspect to answer this RQ is how comfortable people are sharing personal information with AI systems. 40% of participants feel unsafe, 42% are neutral and 18% feel safe sharing personal information.

We included three open questions, two related to the scale questions included in RQ2 and one related to governance in AI. In our first question *"For the ones that you gave higher scores, why do you think you would prefer to receive the service from AI systems as opposed to receiving them from a human?"* participant reasons varied across the following factors: Better speed at providing those services, lack of compromise on people's lives & safety, already receiving such services from AI systems, trust of AI systems to perform with the right data basis, more ease in receiving the service, the services indicated for are less personal or that do not require emotions, and ease of access.

Similarly, we asked participants about the scenarios in which they gave lower scores. Participant reasons varied across the following factors: Lack of emotions/human sensitivity/empathy (21/34 participants), presence of bias against certain population, lack of ability for AI to handle personal matters (funeral home scenario), and lack of ethics (ethical framework).

When asked if participants think there needs to be a government oversight, regulations and guidelines in AI, 64% of participants explicitly indicated *"Yes"* to some form of government oversight, 10% said *"No"* and 26% had mixed answers.

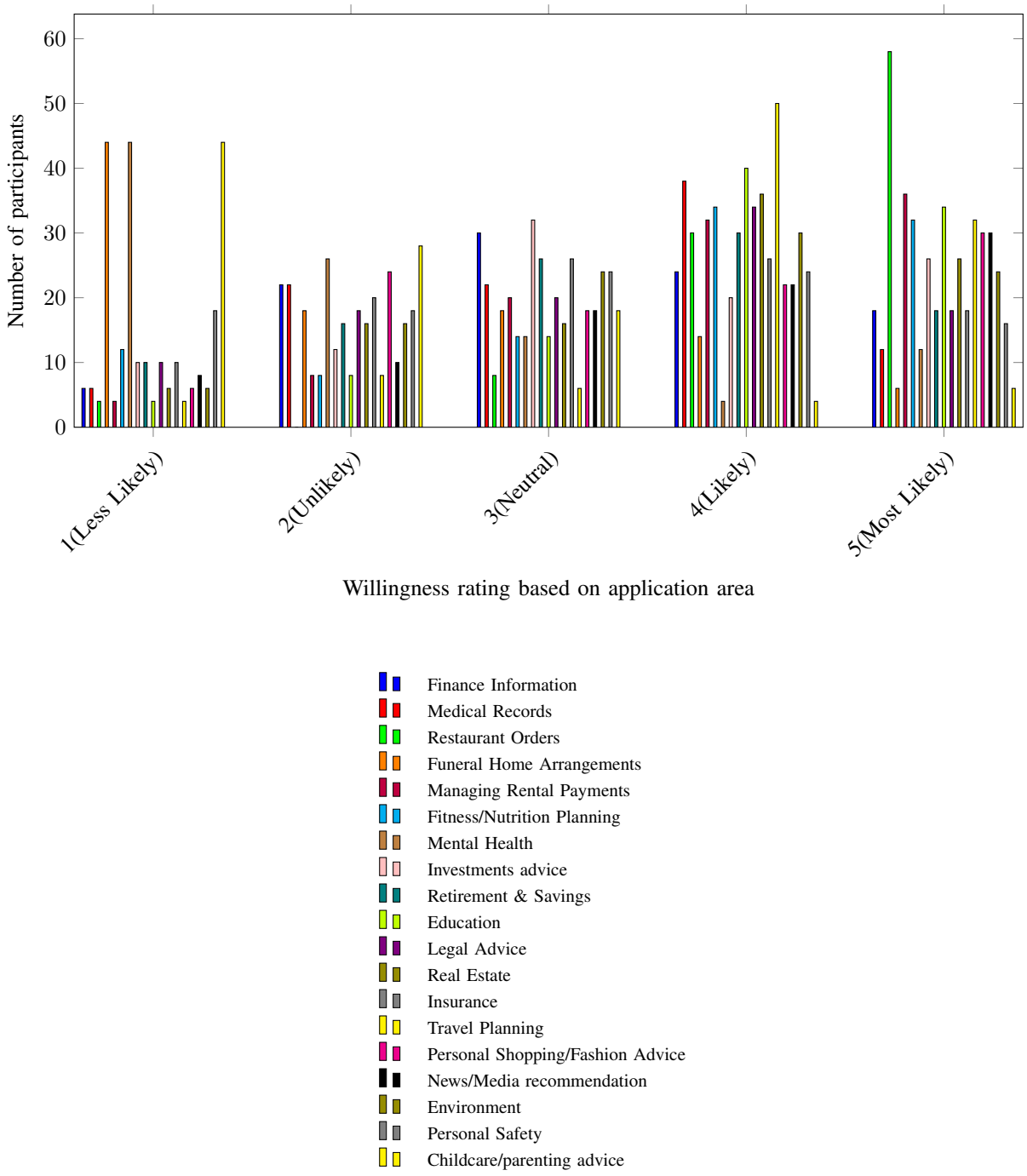

Fig. 4. Participants' Likelihood of Using Services

Participants that indicated *"Yes"* to some form of government oversight, included answers like: *There is so much we don't know about AI, misinformation & privacy issues*, *bad actors misappropriating it*, *AI will end us*, and *need for accountability, transparency and privacy*. Participants that indicated *"No"* to the same question included answers like: *Lack of trust in the government*, *such frameworks will slow down the progress of AI and it should remain autonomous*. Participants with mixed answers indicated: *Regulation should be on the use of such systems not on the systems themselves*, and *"Let's all wing it because these frameworks can be shortsighted"*.

V. Discussion

Our results reflect a number of ideas about AI that have appeared in public discussion and the media, for example the need of governance and frameworks to regulate AI.

First, we asked participants about their knowledge about AI-based systems. We found that 80% of participants indicated that they had prior knowledge of AI systems. Participants had an optimistic opinion about the future developments of AI with 94% positive response. When asked if they feel the benefits of AI supersede their cost to environment, 38% of participants agreed. Our findings show that 90% of participants believe certain tasks or services could benefit from AI, but they also hesitate with using AI in certain tasks. When participants are asked about particular scenarios in which AI could be added to the services they already use, their answers vary depending on certain factors.

The factors that impede participants to adopt certain services fuelled by AI are: how comfortable people feel sharing personal information with AI systems, lack of emotions/human sensitivity/empathy, presence of bias against a certain population, lack of ability for AI to handle personal matters, and lack of ethics (e.g. receiving mental health support).In contrast, the factors that motivate participants to use AI in certain tasks are: better speed at providing those services, they are already receiving such services in our list by an AI system, trust of AI systems to perform with the right data, and the services indicated are less personal (e.g. restaurant orders).

For future work, it would be useful to explore how these factors influence groups of participants from different countries where there's different availability and awareness of AI technologies; a detailed analysis on how these factors correlate to participants knowledge about AI; and how these sentiments affect their willingness or not to receive services from AI. Further, it would be worthwhile to categorize the list of services we proposed into categories (e.g. Finance, health, shopping) and analyze if there is any pattern between the willingness or not to adopt these services.

VI. Threats of Validity

In this section, we discuss the most significant threats of validity in our study.

Internal Validity. One potential threat is related to the quality of our questions and its interpretation by participants. To minimize this threat, we link the questions we created for this survey to give answers to each RQ. We incorporate three open questions, two related to their preference/trust on AI-based systems, and another related to getting government oversight. These questions are made to avoid restricting participants to Yes/No answers or scale of preference. This way, we mitigate the risk of the participant's opinion being restricted to our survey design. Moreover, we ran a survey pilot with three participants and we worked on their feedback to refine some questions and clarify our intent.

External Validity. Our study was shared via LinkedIn to our network. This way of gathering participants restricts our study to the diversity of our connections on this platform. Regardless, our survey included 45% of participants which work is not directly related to Technology, which is our area of expertise and so is most of our network connections. Another threat is that our study is limited to the cultural and demographic differences among participants, which might have influenced their perspectives related to our questions. We are not able to measure this since we did not gather any personal information about the participant apart from age group. Finally, our small sample of 50 participants may restrict the generalizability of our findings to broader populations. Still, we find our demographics are relatively diverse (based on the sector participants work in) for the scope of our project.

VII. Reflection

As AI continues to improve at significant speed, it will be involved in more decision-making responsibilities on behalf of humans. This will create ethical dilemmas on what kind of services people would want to receive by AI or humans. Ethical AI Education will need to improve on the general public, industry leaders, and policy makers with the goal of understanding the consequences of future advancements on AI.

Our results reflect that participants are optimistic about AI, but when confronted with specific scenarios they would have issues adopting this technology. We hope that future work can identify the correlation between knowledge in AI and their willingness to adopt AI in certain scenarios, as we think these results impact how AI regulations are made. Additionally, this emphasizes the importance of developing robust regulatory frameworks and policies to govern the ethical use of AI while taking in mind the society preferences in the use of their data, and how they would like to access services. Moreover, it calls for a need of development of AI with human-centred needs.

If industry adapts AI in services that previously did not require AI they will be confronted by the needs, worries and possible anxieties of society towards their data. Our work is a first step forward into that direction. We believe that responsible creation of novel AI services will need to adapt to current society, recognizing the disparities in technological accessibility across diverse groups (e.g. country, economic status). We need to question if we really need people adjusting to the AI era, blindly following technological advancements,

or whether it is fundamental for AI to adapt to the needs of people.

VIII. Acknowledgements

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IX. Conclusion

We surveyed public opinion on artificial intelligence services with 50 participants. Our study identifies areas where the general public expresses discomfort with AI making decisions on their behalf. We find that participants do share the public consensus that there needs to be regulations and frameworks over implementation of AI. Overall, participants don't trust AI in certain services that require human connection or emotions, and which are not of a probabilistic nature (e.g. receiving mental health support). In contrast, participants are fine in trusting AI in tasks that need decisions based on data, and tasks in which speed is important (e.g. restaurant orders). Our results emphasize the importance of developing robust regulatory frameworks and policies to govern the ethical use of AI, and working with society towards this goal.

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APPENDIX

APPENDIX 1: SUMMARY PROTOCOL FORM (SPF)

Abbreviated Summary Protocol Form for Academic Department Review

For Minimal Risk Student Course Related Research Intended Solely for Pedagogical Purposes Office of Research – Research Ethics and Compliance Unit: GM 900– 514.848.2424 ex. 7481
oor.ethics@concordia.ca

This form is recommended for student research projects conducted as part of course requirements.

This form should only be used for research involving minimal or less risk to the participants. It may be completed either:

- By the instructors who will describe the research carried out by their students.
- By the students themselves. In this case, the form may be reviewed by the instructor and then transmitted to the appropriate Departmental representative responsible for the review of minimal risk course related research intended for pedagogical purposes.

Part One: Basic Information

Date: 31/01/2024

1. Name and Department/Program of Researcher:

   Researcher Name: Mayra Ruiz, Shubham Sharma, Gideon Peters

   Department/Program: Gina Cody School of Engineering and Computer Science

   Telephone number: +14385358113 E-mail address: gideonpeters85@gmail.com

2. Title of Research Project or Activity:

PERCEPTION OF PEOPLE ON AI-BASED SERVICES

3. Name and Number of Course:

ENCS691 - Social Aspects of AI

4. Type of Research:

a. x Survey Forms
b. ☐ Interviews
c. ☐ Lab experiment
d. ☐ Anthropological Observations
e. ☐ Other (**explain below**):

_____

Part Two: Research Participants

5. Characteristics: How many participants are involved in this study? 30

Are they primarily:

a. ☐ College/University Students
b. x Other adults
c. ☐ Other (**specify**): _____

Part Three: Ethical Concerns

6. Informed Consent:

Have you developed a means to gain participants informed consent?

x Yes ☐ No

Will researchers be using a written form or an oral protocol?

x Written ☐ Oral

7. Freedom to Discontinue:

Will you inform participants of their right to discontinue?

x Yes ☐ No

8. Confidentiality or Anonymity or Alternatives:

Will your research offer participants anonymity (you will not be able to identify them)?

x Yes ☐ No

Will your research offer participants confidentiality (you will know who they are but their identities will not be evident in the research reports)?

☐ Yes x No

Will the identities of participants be evident in your research reports?

☐ Yes x No

If yes, have you informed them of this fact?

☐ Yes ☐ No

9. Deception:

Are you in any way deceiving participants about the nature of your research?

☐ Yes x No

If yes, please describe below the nature of the deception and how you will de-brief participants. *Please attach any relevant information.*

_____

10. Managing Risky Situations:

If as a result of your research, you discover that a participant(s) is at risk in some way(s) (psychological, physical, reputational), do you know someone to contact to help advise you how to respond?

x Yes ☐ No

11. Coercion:

Is there a potential for participants to perceive they are being coerced into participating in this study?

☐ Yes x No

If yes, do you have a written plan to prevent this perception?

☐ Yes ☐ No, I will have it on (give a date):

12. Signatures:

Researcher(s): Gideon Peters, Mayra Ruiz, Shubham Sharma Date: 31/01/2024

Instructor: Dr Tanja Tajmel Date: 31/01/2024

APPENDIX 2: CONSENT FORM TO PARTICIPATE IN RESEARCH

CONSENT TO PARTICIPATE IN PERCEPTION OF PEOPLE ON AI-BASED SERVICES

I understand that I have been asked to participate in a research project being conducted by *Mayra Ruiz, Shubham Sharma and Gideon Peters* of Gina Cody School of Engineering and Computer Science of Concordia University *(gideonpeters85@gmail.com, +14385358113)* under the supervision of Dr Tanja Tajmel of Gina Cody School of Engineering and Computer Science of Concordia University (*tanja.tajmel@concordia.ca,)*. In case of any questions or concerns please contact Dr Tanja Tajmel.

A. PURPOSE

The purpose of the research is to investigate the perception and readiness of participants in receiving different services from AI-based applications. AI-based systems are computer systems that perform tasks simulating human intelligence. Some examples include: Chatbots; Virtual Personal Assistants like Siri, Google Assistant, Alexa; Recommendation systems like Netflix, Spotify, Amazon; Self-driving cars; Translation tools like Google Translate, the list goes on. This research project seeks to understand how willing people are to adopt these systems in their day-to-day activities.

The research findings are a result of a pedagogical exercise for the "ENCS691: Social Aspects of AI" course at Concordia University. We may publish and present the research process and what has been learned from the research data at a future conference but we will not publish any empirical data obtained from participants.

B. PROCEDURES

The research would be conducted by sending a survey link to participants through LinkedIn based on the contacts of the researchers. We will send the survey to family, friends and colleagues. The survey would be organised and carried out on Google Forms. A consent section would be added as well as a brief introduction about the research group and the research topic. They would also be required to answer each question provided as related to the study.

C. RISKS AND BENEFITS

The researchers will not collect any personal data that can be used to trace the identity of the participants such as name. There is minimum risk involved in participating in this research. We are using a third party survey application.

Please know you have the right to refrain from answering any of our questions or abstain from completing the survey at any moment during the process.

D. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.

- I understand that my participation in this study is:

CONFIDENTIAL (i.e., the researcher might not know my identity but it will not be shared with anyone)

- I understand that the data from this study may be published.

☐ I have carefully studied the above and agree to these terms.

If at any time you have questions about the proposed research, please contact the faculty supervisor: Dr. Tanja Tajmel, Centre for Engineering in Society, GCS, Concordia University, tanja.tajmel@concordia.ca, 514-848-2424 ex. 5982

If at any time you have questions about your rights as a research participant, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 oor.ethics@concordia.ca

RESEARCH QUESTIONS
RQ1 - What do people know about AI-based systems and services?

RQ2 - To what extent are people willing to interact with AI-based services as opposed to fellow human beings?

RQ3 - What factors influence people's perception of AI-based services?

PROPOSED SURVEY QUESTIONS

(Participant's background)

1. How old are you?
    a. less than 20
    b. 21 - 25
    c. 26 - 30
    d. 31 - 40
    e. 41 - 50
    f. 51 - 60
    g. 61 - 70
    h. 71 - 80
    i. 80 - 90
    j. 91+

(Participant's background)

2. What's your profession (checkbox; the participant will be able to select multiple e.g. participant is student and employed)
    a. student
    b. employed
    c. unemployed
    d. retired
    e. Other

(Participant's background)

3. If you are employed, what sector do you work in? Add: "Other"
    a. Finance

b. Technology
c. Agriculture
d. Education
e. Engineering
f. Medicine
g. Public
h. Customer service
i. Other?(specify)

(Supports RQ1)

4. On a scale of 1 to 5, how knowledgeable are you about AI systems?

(Supports RQ1)

5. On a scale of 1-5, how certain are you that with time, AI systems will evolve to serve civilization and improve quality of lives?

(Supports RQ2)

6. Do you believe certain tasks or services in your everyday life could benefit from AI or automation?
    a. Yes
    b. No
    c. Not sure

(Supports RQ2)

7. Would you prefer to be assisted by a human operator or an AI system in case of emergency situations?
    a. Human operators
    b. AI system
    c. Depends on which field

(Supports RQ3)

8. Would you like to be asked for consent before an AI based service is administered on you?
    a. Yes
    b. No
    c. Not sure

(Supports RQ3)

9. Do you believe that AI systems can understand and respond to human emotions and needs better than a qualified human professional?
    a. Yes
    b. No
    c. Not Sure

(Supports RQ3)

10. On a scale of 1-5, to what extent do you feel safe sharing your personal information with AI systems while getting a service from AI?

(Supports RQ2)

11. On a scale of 1-5, if you had the option to get a human operator instead of an AI chatbot, would you be willing to pay more for the service?

(Supports RQ1)

12. Do you feel the benefits of AI to society supersede their costs to the environment, i.e physical space, energy consumption, heat dissipation?
    a. Yes
    b. No
    c. Not Sure

(Supports RQ2)

13. On a scale of 1 to 5 how willing would you be to receive each of the following specific services from an AI system? (These services would be split into different questions in the form for them to assess using a likert scale)
    a. Finance information from your bank, from an AI system?
    b. Retrieving or querying personal health information/ medical records from your medical provider?
    c. Placing and managing Restaurant orders
    d. Receiving calls from a funeral home to manage funeral arrangements for a loved one.
    e. Managing Rental payments
    f. Creating or managing personalized fitness and nutrition plans
    g. Receiving mental health support and counseling
    h. Investments and stock market advice
    i. Managing Retirement plans and savings management
    j. Educational tutoring and learning assistance
    k. Receiving Legal advice and preparing related documents
    l. Analysing the Real estate market and getting property recommendations to make a buying decision.
    m. Managing your Insurance policies and resolving related disputes
    n. Travel planning and booking services
    o. Personal shopping and fashion advice
    p. News and media recommendation content
    q. Environmental and sustainability advice
    r. Personal safety and emergency response suggestions
    s. Childcare and parenting advice
    t. Other(Specify)

(Supports RQ3)

14. For the ones that you gave higher scores, why do you think you would prefer to receive the service from AI systems as opposed to receiving them from a human?
    -Open question-

(Supports RQ3)

15. For the ones that you gave lower scores, why do you think you wouldn't trust AI systems to give you these services ?
    -Open question-

(Supports RQ3)

16. Do you feel there needs to be a government oversight, regulations and guidelines to govern the development and implementation of AI technology in human society? If Yes, why
    -Open question-

APPENDIX 3: RECRUITMENT POSTS

LinkedIn

Mayra Ruiz • 1st

MASc. in Software Engineering | SE4AI

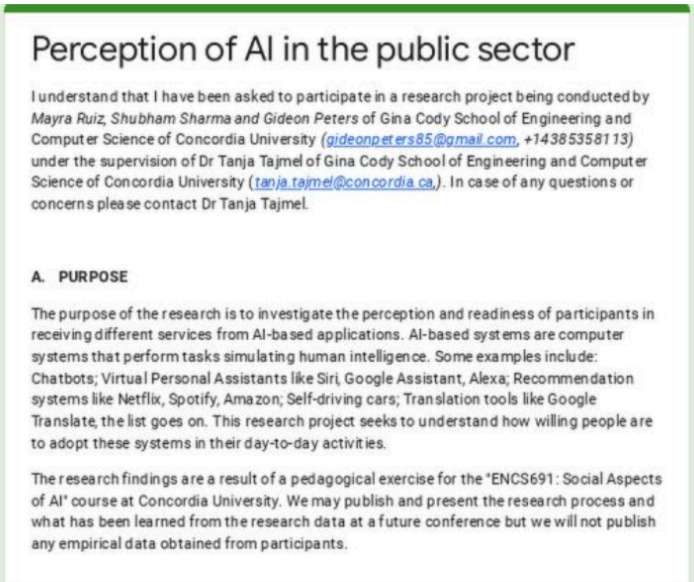
1mo •

🚀 We need your insight on AI in the Public Sector! 🚀

Hello everyone! As part of our Social Aspects of AI course, we're studying people perceptions of AI in the public sector. It's clear: AI's reach is expanding, often without the end user knowing an algorithm may be behind the service. This brings us to the million-dollar question: When it comes to public services, where do you draw the line between AI and human interaction? Which services are you comfortable entrusting to AI, and which do you believe should remain firmly in human hands?

We'd appreciate to have your perspective on this topic. Can you spare ~4 minutes to share your thoughts?

Thank you for being part of this!



Perception of AI in the public sector

I understand that I have been asked to participate in a research project being conducted by *Mayra Ruiz, Shubham Sharma and Gideon Peters* of Gina Cody School of Engineering and Computer Science of Concordia University (*gideonpeters85@gmail.com, +14385358113*) under the supervision of Dr Tanja Tajmel of Gina Cody School of Engineering and Computer Science of Concordia University (*tanja.tajmel@concordia.ca*). In case of any questions or concerns please contact Dr Tanja Tajmel.

A. PURPOSE

The purpose of the research is to investigate the perception and readiness of participants in receiving different services from AI-based applications. AI-based systems are computer systems that perform tasks simulating human intelligence. Some examples include: Chatbots; Virtual Personal Assistants like Siri, Google Assistant, Alexa; Recommendation systems like Netflix, Spotify, Amazon; Self-driving cars; Translation tools like Google Translate, the list goes on. This research project seeks to understand how willing people are to adopt these systems in their day-to-day activities.

The research findings are a result of a pedagogical exercise for the "ENCS691: Social Aspects of AI" course at Concordia University. We may publish and present the research process and what has been learned from the research data at a future conference but we will not publish any empirical data obtained from participants.

Perception of AI in the public sector

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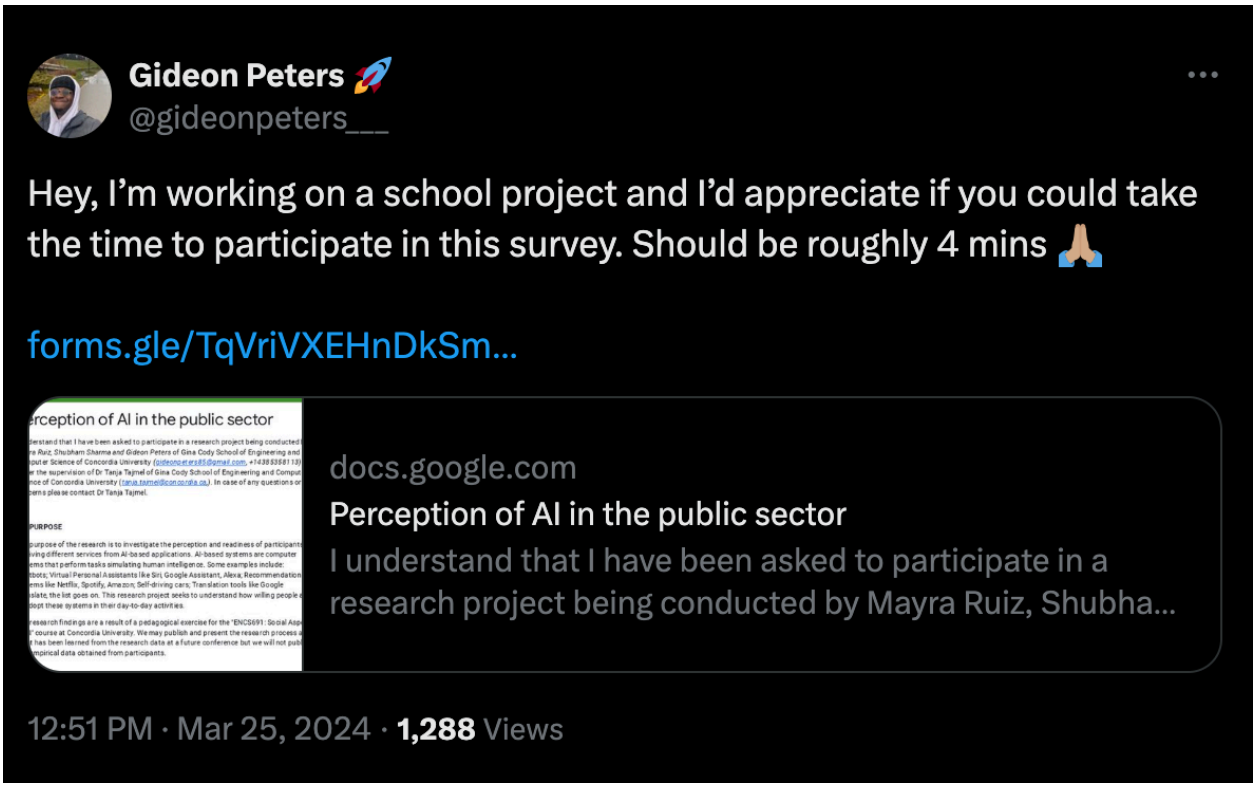
Gideon Peters 🚀
@gideonpeters___
Hey, I'm working on a school project and I'd appreciate if you could take the time to participate in this survey. Should be roughly 4 mins 🙏
forms.gle/TqVriVXEHnDkSm...
rception of AI in the public sector
docs.google.com
Perception of AI in the public sector
I understand that I have been asked to participate in a research project being conducted by Mayra Ruiz, Shubha...
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APPENDIX 4: RESEARCH INSTRUMENTS

APPENDIX 4A: SURVEY FORM

Perception of AI in the public sector

I understand that I have been asked to participate in a research project being conducted by *Mayra Ruiz, Shubham Sharma and Gideon Peters* of Gina Cody School of Engineering and Computer Science of Concordia University *(gideonpeters85@gmail.com, +14385358113)* under the supervision of Dr Tanja Tajmel of Gina Cody School of Engineering and Computer Science of Concordia University (*tanja.tajmel@concordia.ca,)*. In case of any questions or concerns please contact Dr Tanja Tajmel.

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The research findings are a result of a pedagogical exercise for the "ENCS691: Social Aspects of AI" course at Concordia University. We may publish and present the research process and what has been learned from the research data at a future conference but we will not publish any empirical data obtained from participants.

B. PROCEDURES

The survey would be distributed via LinkedIn, WhatsApp and X. The survey would be organized and carried out on Google Forms. A consent section is also added below as well as a brief introduction above about the research group and the research topic. They would also be required to answer each question provided as related to the study. Overall, the survey takes approximately 4-5 minutes to complete.

C. RISKS AND BENEFITS

The researchers will not collect any personal data that can be used to trace the identity of the participants such as name. There is minimum risk involved in participating in this research.

Please know you have the right to skip certain questions or abstain from completing the survey at any moment during the process.

D. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.

- I understand that my participation in this study is:

CONFIDENTIAL (i.e., the research team might know my identity but it will not be shared with anyone)

- I understand that the researchers may publish and present the research process and what has been learned from the research data at a future conference but we will not publish any empirical data obtained from participants.

If at any time you have questions about the proposed research, please contact the faculty supervisor: Dr. Tanja Tajmel, Centre for Engineering in Society, GCS, Concordia University, tanja.tajmel@concordia.ca, 514-848-2424 ex. 5982

If at any time you have questions about your rights as a research participant, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 oor.ethics@concordia.ca

* Indicates required question

1. *

Check all that apply.

☐ I have carefully studied the above and agree to these terms.

Background

2. How old are you? *

Mark only one oval.

- ◯ less than 20
- ◯ 21-25
- ◯ 26-30
- ◯ 31-40
- ◯ 41-50
- ◯ 51-60
- ◯ 61-70
- ◯ 71-80
- ◯ 80-90
- ◯ 91+

3. What's your profession? *

Check all that apply.

- ☐ student
- ☐ employed
- ☐ unemployed
- ☐ retired
- ☐ other

4. If you are employed, what sector do you work in?

Mark only one oval.

- ◯ Finance
- ◯ Agriculture
- ◯ Education
- ◯ Technology
- ◯ Other: _____

Perception of AI

We would like to know your thoughts about AI systems, kindly answer the questions below.

5. On a scale of 1 to 5, how knowledgeable are you about AI systems? *

Mark only one oval.

	1	2	3	4	5	
Not muc	◯	◯	◯	◯	◯	Very knowledgeable

6. On a scale of 1-5, how certain are you that with time, AI systems will evolve to serve civilization and improve quality of lives? *

Mark only one oval.

	1	2	3	4	5	
Very	◯	kely	◯	◯	◯	Very likely

7. Do you believe certain tasks or services in your everyday life could benefit from AI or automation? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

8. Would you prefer to be assisted by a human operator or an AI system in case of emergency situations? *

Mark only one oval.

- ◯ Human operators
- ◯ AI System
- ◯ Depends on the field

9. Would you like to be asked for consent before an AI based service is administered on you? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not Sure

10. Do you believe that AI systems can understand and respond to human emotions and needs better than a qualified human professional? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not Sure

11. On a scale of 1-5, to what extent do you feel safe sharing your personal information with AI systems while getting a service from AI? *

Mark only one oval.

	1	2	3	4	5	
Very unsafe	◯	◯	◯	◯	◯	Very safe

12. On a scale of 1-5, if you had the option to get a human operator instead of an AI chatbot, would you be willing to pay more for the service? *

Mark only one oval.

	1	2	3	4	5	
Very unli	◯	◯	◯	◯	◯	Very likely

13. Do you feel the benefits of AI to society supersede their costs to the environment, i.e physical space, energy consumption, heat dissipation? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

Skip to question 14

On a scale of 1 to 5 how willing would you be to receive each of the following specific services from an AI system?

14. Finance information from your bank, from an AI system?

Mark only one oval.

	1	2	3	4	5	
Very unli	◯	◯	◯	◯	◯	Very likely

15. Retrieving or querying personal health information/medical records from your medical provider?

Mark only one oval.

	1	2	3	4	5	
Very	◯	kely	◯	◯	◯	Very likely

16. Placing and managing restaurant orders?

Mark only one oval.

	1	2	3	4	5	
Very	◯	kely	◯	◯	◯	Very likely

17. Receiving calls from a funeral home to manage funeral arrangements for a loved one?

Mark only one oval.

	1	2	3	4	5	
Very	unli	◯	◯	◯	◯	Very likely

18. Managing rental payments?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

19. Creating or managing personalized fitness and nutrition plans?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

20. Receiving mental health support and counseling?

Mark only one oval.

	1	2	3	4	5	
Very	◯	kely	◯	◯	◯	Very likely

21. Investments and stock market advice?

Mark only one oval.

	1	2	3	4	5	
Very	unli	◯	◯	◯	◯	Very likely

22. Managing retirement plans and savings management?

Mark only one oval.

	1	2	3	4	5	
Very	unlikely		◯	◯	◯	Very likely

23. Educational tutoring and learning assistance?

Mark only one oval.

	1	2	3	4	5	
Very unli	◯	◯	◯	◯	◯	Very likely

24. Receiving legal advice and preparing related documents?

Mark only one oval.

	1	2	3	4	5	
Very unli	◯	◯	◯	◯	◯	Very likely

25. Analyzing the real estate market and getting property recommendations to make a buying decision?

Mark only one oval.

	1	2	3	4	5	
Very unlikely	◯	◯	◯	◯	◯	Very likely

26. Managing your Insurance policies and resolving related disputes?

Mark only one oval.

	1	2	3	4	5	
Very ◯ kely	◯	◯	◯	◯	◯	Very likely

27. Travel planning and booking services?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

28. Personal shopping and fashion advice?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

29. News and media recommendation content?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

30. Environmental and sustainability advice?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

31. Personal safety and emergency response suggestions?

Mark only one oval.

	1	2	3	4	5	
Very	◯	◯	◯	◯	◯	Very likely

32. Childcare and parenting advice?

Mark only one oval.

	1	2	3	4	5	
Very unlikely	◯	◯	◯	◯	◯	Very likely

33. Other (Specify)

34. For the ones that you gave higher scores, why do you think you would prefer to receive the service from AI systems as opposed to receiving them from a human?

35. For the ones that you gave lower scores, why do you think you wouldn't trust AI systems to give you these services ?

36. Do you feel there needs to be a government oversight, regulations and guidelines * to govern the development and implementation of AI technology in human society? If Yes, why?

APPENDIX 4B: RESULTS & ANALYSIS

- Our results have been recorded in a Google Sheet and can be found here
- Our analysis was done using a Google Colab Workbook and can be found here