

Perceptions towards eXplainable Artificial Intelligence (XAI)

This questionnaire is prepared as a survey for a research project at the Department of Computer Science & Engineering, the University of Moratuwa, Sri Lanka collaborating with the School of Computing at the National University of Singapore, Singapore.

This research aims to quantify and analyze the perceptions toward Artificial Intelligence(AI) and the importance of eXplainable Artificial Intelligence (XAI). Results from the survey will motivate researchers to focus on key areas of explainability to provide trustworthy AI solutions.

This data collection is done anonymously and used for academic purposes only. No personally identifiable information is collected during this questionnaire. If you have any queries on this research data collection effort, kindly contact the research team on email sandarekaw@cse.mrt.ac.lk

The survey has three sections.

* Indicates required question

Section 1 - Getting to know your background

1. Gender *

Mark only one oval.

- ☐ Female
- ☐ Male
- ☐ Prefer not to say

2. Age *

3. Education level *

Mark only one oval.

- ☐ Completed Primary School
- ☐ Completed High School
- ☐ Completed Undergraduate Degree
- ☐ Completed Post Graduate Degree

4. Field of occupation *

Mark only one oval.

- ☐ Unoccupied
- ☐ Architecture and Engineering
- ☐ Arts, Design, Entertainment, Sports, and Media
- ☐ Building and Grounds Cleaning and Maintenance
- ☐ Business and Financial Operations
- ☐ Community and Social Services
- ☐ Computer and Mathematical
- ☐ Construction and Extraction
- ☐ Education, Training, and Library
- ☐ Farming, Fishing, and Forestry
- ☐ Food Preparation and Serving Related
- ☐ Healthcare Practitioners and Technical
- ☐ Healthcare Support
- ☐ Installation, Maintenance, and Repair
- ☐ Legal
- ☐ Life, Physical, and Social Science
- ☐ Management
- ☐ Military Related
- ☐ Office and Administrative Support
- ☐ Personal Care and Service A
- ☐ Production
- ☐ Protective Service
- ☐ Sales and Related
- ☐ Transportation and Material Moving
- ☐ Other

5. Occupation level

Mark only one oval.

- ☐ Unoccupied
- ☐ Entry level
- ☐ Middle level
- ☐ Management level
- ☐ Executive level

6. Country of Residence

Mark only one oval.

- ☐ Afghanistan
- ☐ Albania
- ☐ Algeria
- ☐ Andorra
- ☐ Angola
- ☐ Antigua and Barbuda
- ☐ Argentina
- ☐ Armenia
- ☐ Australia
- ☐ Austria
- ☐ Azerbaijan
- ☐ The Bahamas
- ☐ Bahrain
- ☐ Bangladesh
- ☐ Barbados
- ☐ Belarus
- ☐ Belgium
- ☐ Belize
- ☐ Benin
- ☐ Bhutan
- ☐ Bolivia
- ☐ Bosnia and Herzegovina
- ☐ Botswana
- ☐ Brazil
- ☐ Brunei
- ☐ Bulgaria
- ☐ Burkina Faso
- ☐ Burundi
- ☐ Cabo Verde
- ☐ Cambodia

- ☐ Cameroon
- ☐ Canada
- ☐ Central African Republic
- ☐ Chad
- ☐ Chile
- ☐ China
- ☐ Colombia
- ☐ Comoros
- ☐ Congo, Democratic Republic of the
- ☐ Congo, Republic of the
- ☐ Costa Rica
- ☐ Côte d'Ivoire
- ☐ Croatia
- ☐ Cuba
- ☐ Cyprus
- ☐ Czech Republic
- ☐ Denmark
- ☐ Djibouti
- ☐ Dominica
- ☐ Dominican Republic
- ☐ East Timor (Timor-Leste)
- ☐ Ecuador
- ☐ Egypt
- ☐ El Salvador
- ☐ Equatorial Guinea
- ☐ Eritrea
- ☐ Estonia
- ☐ Eswatini
- ☐ Ethiopia
- ☐ Fiji
- ☐ Finland
- ☐ France
- ☐ Gabon

- ☐ The Gambia
- ☐ Georgia
- ☐ Germany
- ☐ Ghana
- ☐ Greece
- ☐ Grenada
- ☐ Guatemala
- ☐ Guinea
- ☐ Guinea-Bissau
- ☐ Guyana
- ☐ Haiti
- ☐ Honduras
- ☐ Hungary
- ☐ Iceland
- ☐ India
- ☐ Indonesia
- ☐ Iran
- ☐ Iraq
- ☐ Ireland
- ☐ Israel
- ☐ Italy
- ☐ Jamaica
- ☐ Japan
- ☐ Jordan
- ☐ Kazakhstan
- ☐ Kenya
- ☐ Kiribati
- ☐ Korea, North
- ☐ Korea, South
- ☐ Kosovo
- ☐ Kuwait
- ☐ Kyrgyzstan
- ☐ Laos

- ☐ Latvia
- ☐ Lebanon
- ☐ Lesotho
- ☐ Liberia
- ☐ Libya
- ☐ Liechtenstein
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Madagascar
- ☐ Malawi
- ☐ Malaysia
- ☐ Maldives
- ☐ Mali
- ☐ Malta
- ☐ Marshall Islands
- ☐ Mauritania
- ☐ Mauritius
- ☐ Mexico
- ☐ Micronesia, Federated States of
- ☐ Moldova
- ☐ Monaco
- ☐ Mongolia
- ☐ Montenegro
- ☐ Morocco
- ☐ Mozambique
- ☐ Myanmar (Burma)
- ☐ Namibia
- ☐ Nauru
- ☐ Nepal
- ☐ Netherlands
- ☐ New Zealand
- ☐ Nicaragua
- ☐ Niger

- ☐ Nigeria
- ☐ North Macedonia
- ☐ Norway
- ☐ Oman
- ☐ Pakistan
- ☐ Palau
- ☐ Panama
- ☐ Papua New Guinea
- ☐ Paraguay
- ☐ Peru
- ☐ Philippines
- ☐ Poland
- ☐ Portugal
- ☐ Qatar
- ☐ Romania
- ☐ Russia
- ☐ Rwanda
- ☐ Saint Kitts and Nevis
- ☐ Saint Lucia
- ☐ Saint Vincent and the Grenadines
- ☐ Samoa
- ☐ San Marino
- ☐ Sao Tome and Principe
- ☐ Saudi Arabia
- ☐ Senegal
- ☐ Serbia
- ☐ Seychelles
- ☐ Sierra Leone
- ☐ Singapore
- ☐ Slovakia
- ☐ Slovenia
- ☐ Solomon Islands
- ☐ Somalia

- ☐ South Africa
- ☐ Spain
- ☐ Sri Lanka
- ☐ Sudan
- ☐ Sudan, South
- ☐ Suriname
- ☐ Sweden
- ☐ Switzerland
- ☐ Syria
- ☐ Taiwan
- ☐ Tajikistan
- ☐ Tanzania
- ☐ Thailand
- ☐ Togo
- ☐ Tonga
- ☐ Trinidad and Tobago
- ☐ Tunisia
- ☐ Turkey
- ☐ Turkmenistan
- ☐ Tuvalu
- ☐ Uganda
- ☐ Ukraine
- ☐ United Arab Emirates
- ☐ United Kingdom
- ☐ United States
- ☐ Uruguay
- ☐ Uzbekistan
- ☐ Vanuatu
- ☐ Vatican City
- ☐ Venezuela
- ☐ Vietnam
- ☐ Yemen
- ☐ Zambia

☐ Zimbabwe

Section 2 - Artificial Intelligence (AI) awareness

7. Which of the following mobile phone app uses AI in its operations *

Mark only one oval.

- ☐ Calculator
- ☐ Email
- ☐ Clock
- ☐ All of the above
- ☐ None of the above

8. Can an AI tool determine if you have risk of Pneumonia by examining your chest x-rays? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ I do not know

9. When you try to unlock your mobile phone using a pin, does an underline AI tool make that decision? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ I do not know

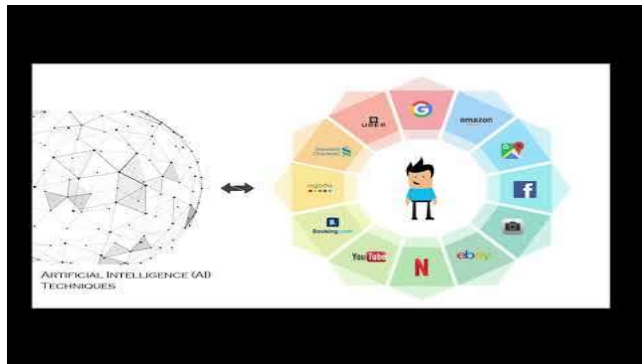
10. Think about the advertisements you see when you are on the internet. Are those selected by AI tools? *

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ I do not know

Section 3 - Perceptions towards eXplainable AI (XAI)

Watch this short (30 second) video for an introduction to eXplainable AI (XAI)



<http://youtube.com/watch?v=8hNvLsj-YLI>

11. Assume that an AI system makes decisions for you in your day-to-day activities. How important is it to know the reasons behind such decisions? *

Mark only one oval.

- ☐ Not important at all
- ☐ Not important
- ☐ Neutral
- ☐ Important
- ☐ Very important

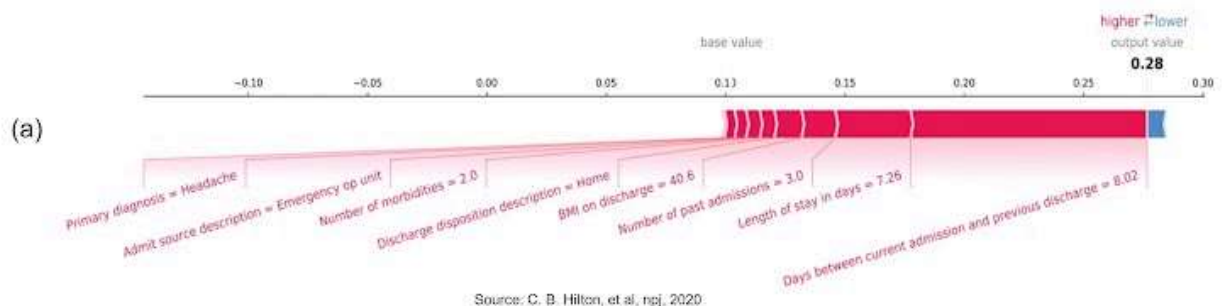
12. Assume that an AI system makes decisions for you in your day-to-day activities. When do you need an explanation for such a decision? *

Mark only one oval.

- ☐ I need an explanation when I get the decision I expected
- ☐ I need an explanation when I do not get the decision I expected
- ☐ I need an explanation for both decisions
- ☐ I don't need explanations

The following section shows different scenarios that use AI systems and two types of explanations given by those AI systems. Which explanation type do you prefer?

13. A person is discharged from the hospital after a hospital stay of more than a week. An AI system predicts that he will be readmitted within the next 30 days. *



- (b) You have a higher chance to be readmitted because this time you stayed for more than 7 days, it has been only 8 days since you were discharged from the last admission, and you had been hospitalized 3 times prior to this admission.

Mark only one oval.

- ☐ (a)
- ☐ (b)

14. An online clothing store recommends dresses to its customer with the help of an AI system. Suppose this system recommends the dress in Figure 1 *



Figure 1



(a)

This dress is recommended because you have purchased many dresses with v-neck before.

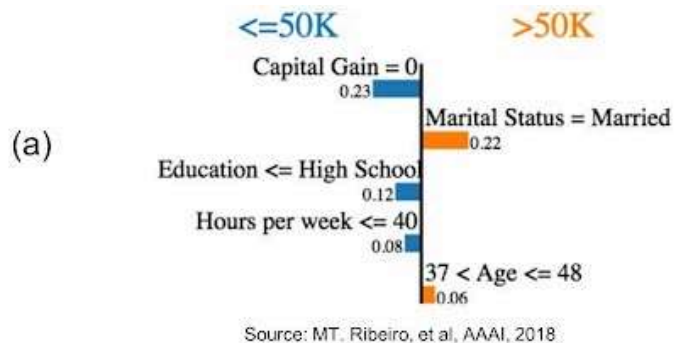
(b)

Mark only one oval.

☐ (a)

☐ (b)

15. A company decides the salary of its new recruits using an AI system. For one employee the AI systems decided to pay less than \$50k per annum. *



- (b) Salary is ≤ 50 because this person's education is less than high school.

Mark only one oval.

☐ (a)

☐ (b)

16. An AI system developed to recognize different pets has recognized the animal in Figure 1 as a Cat. ★



Figure 1

- (a) This is an image of a cat because it has the following features.



- (b) This is an image of a cat because it has triangular ears and whiskers.

Mark only one oval.

☐ (a)

☐ (b)

17. Decisions made by different AI systems may have different impacts on you, e.g., financial impact or medical impact. AI systems with which impact needs the most explanations? Rank from the impact that needs the most explanation to the least. (1 - most, 5 - least). *

Mark only one oval per row.

	1	2	3	4	5
Financial impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legal impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social posting impact (fb/ig)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time Wasted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Which kind of explanations about the AI system would you like to see? *

Check all that apply.

- ☐ An overall explanation of how the AI system works - once for the application
- ☐ An explanation for every decision made by the AI system - once per decision
- ☐ Explanation per decision if requested

19. What kind of explanation is more useful for you? *

Mark only one oval.

- ☐ An explanation explaining why AI made a certain decision
- ☐ An explanation explaining how you can change AI's decision in the future

20. Consider the following scenarios where AI systems make decisions. Rank the scenarios from the one needing explanations most to the least.(1 - most, 5 - least) *

Mark only one oval per row.

	1	2	3	4	5
A surveillance system detecting suspicious person at public places.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A smartwatch detecting Atrial fibrillation (a common heart rhythm disorder that elevates stroke risk) in stroke survivors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A remote monitoring systems in tunnels alerting maintenance requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An intelligent virtual assistant helping to operate home appliances.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A parking slot recommendation systems in the city area.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. I expect explanations to be

Check all that apply.

- ☐ Easy to understand - Expect no technical expertise from me
- ☐ Faithful - Reflect the actual reasoning of the AI system
- ☐ Descriptive - State precisely what cause the AI system decision without leaving room for ambiguity
- ☐ Consistent - Provide similar explanations for similar/neighboring examples
- ☐ Discriminative - State Specific reasons influence the different decisions of AI system
- ☐ Interactive - Allow me to understand reasoning of the AI system in different granularities
- ☐ I'd like to see other options that I have in some scenarios (maybe percentage wise)
- ☐ I would like to have easy to understand explanations, but with some technical aspects as well.
- ☐ It depends on the scenario/context, different scenarios require different explanation level.
- ☐ Be transparent about potential biases associated with both the results and explanations
- ☐ I expect explanations to be infrequent (or rate to exponentially decay) and only generate explanations when previously provided explanations are not sufficient to explain the current scenario.
- ☐ Other: _____

22. Are there any comments or concerns you would like to raise about XAI?

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