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Pre-self-assessment survey

ML Biases Literacy Pre-play Survey

The purpose of this survey is to learn about your current understanding of ML biases, and algorithms used in hiring systems. We are not testing you, we are collecting this information to gather baseline information. Please respond to the information as honestly as possible based on your immediate first reaction.

Knowledge

ML literacy

Rate your **knowledge** on the following aspects: 1(never heard before) - 7 (very familiar)

1. The biases in ML pipeline
2. The potential harm of ML
3. The application of ML in job applications
4. Ways to address ML biases

Dispositions

ML Self-efficacy [1-7, strongly disagree - strongly agree] [reverse code 2, 4]

1. I am confident I will do well in learning about biases in ML pipeline
2. I am not confident I will do well when applying these de-biasing techniques
3. I believe I can master the knowledge and skills required for learning about ML biases
4. I don't think I can win the game

ML Anxiety [1-7, strongly disagree - strongly agree]

- 1 I feel insecure about my ability to interpret ML output
- 2 I look forward to using ML for my homework/assignment/job
- 3 I do not think I would be able to learn ML
- 4 The challenge of learning about ML is exciting
- 5 I am confident that I can learn ML skills
- 6 Anyone can learn to use ML is they are patient and motivated
- 7 Learning to use ML is like learning any new skill, the more you practice, the better you become
- 8 I am afraid that if I begin to use ML more, I will become more dependent upon them and lose some of my reasoning skills

- 9 I am sure that with time and practice I will be as comfortable working with ML as I am in working by hand
- 10 I feel that I will be able to keep up with the advances happening in the ML field
- 11 I would dislike working with ML tools that are smarter than I am
- 12 I feel apprehensive about using ML
- 13 I have difficulty in understanding the technical aspects of ML
- 14 It scares me to think that I could cause the ML to make biased prediction by using incomplete data
- 15 I hesitate to use a ML for fear of making mistakes that I cannot correct
- 16 You have to be a genius to understand all the steps in ML pipeline
- 17 If given the opportunity, I would like to learn more about and use ML more
- 18 I have avoided ML because they are unfamiliar and somewhat intimidating to me
- 19 I feel ML are necessary tools in both educational and work settings

Formative study stater questions/open-ended survey questions for the evaluation study

The following questions will be asked after gameplay [open-ended]

1. Was there anything you learned playing the game? Please explain.
2. How do you feel now that you have played the game?
3. What will you do if you face ML hiring discrimination?
4. Is there anything you will change about the game? What are they? Why?

Post-self-assessment survey

ML Biases Literacy Post-play Survey

Now that you have played the game, below you will see several prompts that will ask your response about ML bias understanding. We will also ask you to respond to several prompts to evaluate the game. Please note that we are evaluating the game, not you. Your response will help us improve the gameplay experience, thus, please respond to the following survey as honestly as possible based on your immediate first reaction.

Game evaluation [7 likert-scale, agree-disagree]

PEOU: (perceived ease to use)

I found the Game easy to learn.

Overall, I think playing the Game provides an easy-to-understand description of ML bias.

ITU: (intention to use)

I would like to play the Game with my friends.

If an organization is going to improve the ML bias literacy of students, I would recommend this game.

PU: (perceived usefulness)

The players find the game useful in increasing awareness in ML concepts, with particular focus on dataset and algorithmic-related bias

Playing the Game made me more familiar with bias.

I feel playing this game is an effective method to gain knowledge on ML bias for students like me.

Overall, I found playing the game to be useful

ML bias game enjoyment scale [7 likert-scale, agree-disagree]

Concentration

1. Most of the gaming activities are related to the learning task
2. No distraction from the task is highlighted
3. Generally speaking, I can remain concentrated in the game
4. I am not distracted from tasks that the player should concentrate on
5. I am not burdened with tasks that seem unrelated
6. Workload in the game is adequate

Immersion

1. I forget about time passing while playing the game
2. I become unaware of my surroundings while playing the game
3. I temporarily forget worries about everyday life while playing the game
4. I experience an altered sense of time
5. I can become involved in the game
6. I feel emotionally involved in the game
7. I feel viscerally involved in the game

Social Interaction

1. I feel cooperative toward other classmates
2. I strongly collaborate with other classmates
3. The cooperation in the game is helpful to the learning
4. The game supports social interaction between players (chat, etc)
5. The game supports communities within the game
6. The game supports communities outside the game

Knowledge Improvement

1. The game increases my knowledge
2. I catch the basic ideas of the knowledge taught
3. I try to apply the knowledge in the game
4. The game motivates the player to integrate the knowledge taught
5. I want to know more about the knowledge taught

Knowledge

ML literacy

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4. Ways to address ML biases

Dispositions

ML Self-efficacy [1-7, strongly disagree - strongly agree] [reverse code 2]

1. I am confident that I have learned about biases in ML pipeline
2. I am not confident that I did well when applying de-biasing techniques
3. I believe I have mastered the knowledge and skills required for learning about ML biases

ML Anxiety [1-7, strongly disagree - strongly agree]

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