The Roles of Artificial Intelligence and Algorithm Aversion in Education

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Introduction

Artificial intelligence (AI) has been rapidly infiltrating the education field for the past few years. It can assist with tasks that range from something as simple as grading multiple choice to generating feedback on a student's essay. With its steadily increasing popularity in the classroom, however, some concerns have arisen regarding its use among students and educators alike.

The use of AI in a traditionally human-led position raises ethical, emotional, and relational questions that are difficult to answer due to the novelty of AI. There is no doubt that the use of AI can enhance the efficiency of most tasks; however, regardless of this, there's still a slight hesitance and resistance from humans when it comes to employing artificial intelligence. This hesitance can be explained by a phenomenon called *algorithm aversion*.

Algorithm aversion can be defined as a reluctance to trust or accept algorithmic decisions, even though these algorithms have been proven to outperform humans when it comes to decision-making. This research aims to gain a better understanding of people's attitudes towards the use of artificial intelligence in an education setting.

Study Design

The study used for this research was of experimental design administered via an online survey. The participants included in this study came from the University of Connecticut's communication department's research participant pool. The demographic of students in the study included both men and women, aged 18-23, of all ethnicities who were enrolled in the COMM 1000 course. After accessing and completing the survey through the participant pool, students were compensated with course credit.

Participants were first randomly exposed to one of three videos,
- Video 1 argues that humans are unique and AI will fall short in trying to replicate the human experience.
- Video 2 argues that AI does have the capability of replicating human experience, and it will successfully do so.
- Video 3 was a control video in which participants were provided information on an irrelevant topic.

After watching one of these videos, participants were surveyed on their thoughts towards
- Social identity threat
- Panhumanism
- Social distancing
- Algorithm aversion
- Robot rights and responsibilities

Next, participants answered questions regarding their opinions on the role of AI in student learning and higher education settings, such as its use in grading, generating educational content, or providing feedback to students.

Finally, participants were thanked for participating and awarded their course credit compensation.
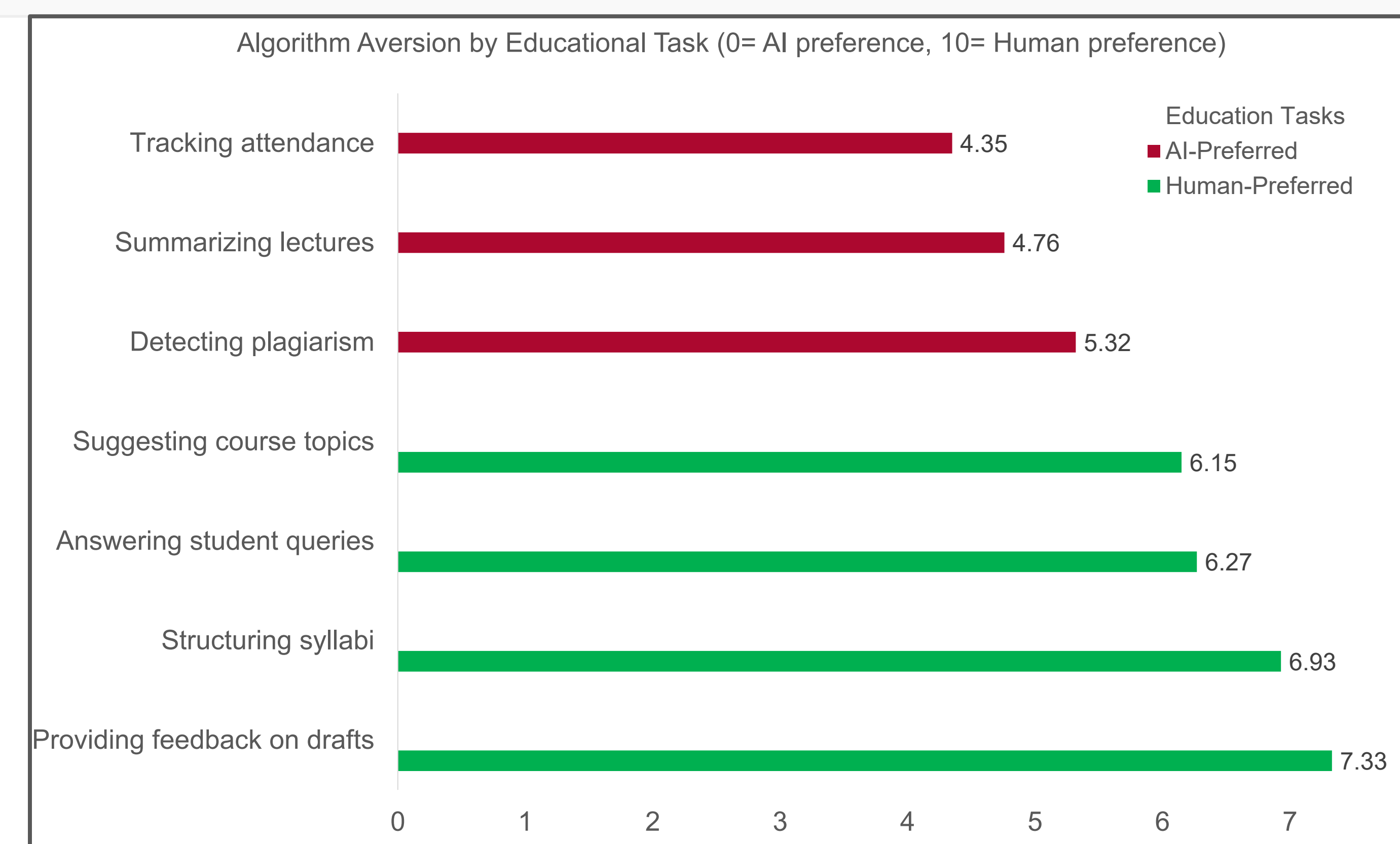
Findings

After analyzing the data received from the survey, there were a few interesting results that were revealed. The data was analyzed with a focus on the relation between algorithm aversion and psychological feelings towards AI.

One interesting finding was that there were strong correlations between mimicry discomfort & identity threat, and algorithm aversion. There were additional strong correlations found between moral superiority beliefs and algorithm aversion. These two similar results both include psychological feelings that have to do with human uniqueness and the threat that AI poses to it.

Another interesting finding from the survey data was the preference the participants seemed to have towards humans being responsible for certain tasks over others. Participants seemed to prefer human input on more complex, judgment-based tasks, such as providing feedback on drafts of an essay. Meanwhile, on the other hand, participants leaned more towards AI input when it came to simpler, more procedural tasks, such as tracking attendance.

Variables	Correlation (r)	P-value	Strength
Mimicry Discomfort – Identity Threat	0.542	< .001	Strong
Uniqueness – Moral Superiority	0.696	< .001	Strong
Algorithm Aversion – Mimicry Discomfort	0.357	< .001	Moderate
AI Salience – Mimicry Discomfort	0.187	< .001	Weak but significant
Algorithm Aversion – Moral Superiority	0.304	< .001	Moderate
AI Salience – Identity Threat	0.037	.446	Not significant
Identity Threat – Moral Superiority	0.054	.262	Not significant

Algorithm Aversion by Educational Task (0= AI preference, 10= Human preference)

Education Tasks
- AI-Preferred
- Human-Preferred

Task	Value
Tracking attendance	4.35
Summarizing lectures	4.76
Detecting plagiarism	5.32
Suggesting course topics	6.15
Answering student queries	6.27
Structuring syllabi	6.93
Providing feedback on drafts	7.33

Discussion

As stated in the findings, the results that showed humans are preferred over AI input were for tasks that are generally more complex, and which have traditionally been more human-oriented tasks, while AI was preferred for simpler more mundane tasks. Additionally, the data showed that there were strong correlations between psychological uniqueness in humans and their aversion to artificial intelligence.

The analysis of the educational tasks data makes sense due to the known efficiency of AI in easy, methodical tasks. The majority of people most likely have no issue with letting AI organize a data set or keep track of something, while they would prefer an empathetic human touch for more complex tasks, such as giving feedback on papers

The relations between the different psychological variables also make sense due to the innate feeling of superiority humans have compared to anything else, living or not. The correlations presented between identity threat and mimicry discomfort suggest that any human mimicry may dissuade humans from engaging with the mimicry user. It can be thought of as an Uncanny Valley effect, where humans are uncomfortable with human-like behavior from non-humans.

Future Directions

Some possible future directions of this research could be further investigation into how to properly integrate artificial intelligence and its capabilities into human society.

It's clear, based on this research, that humans will feel threatened by AI if it's trying to act as a replacement for humans. To combat this threatened feeling, users of AI could do more to present and view it as more of a tool for humans rather than a replacement. AI has its obvious advantages, and it has already allowed for technological advancement in its young life span, so to completely eliminate it due to a discomforting feeling towards its capability would be a waste of opportunity. It should continue to be utilized as it has been, but measures should be taken to make the human population feel safer with it and help people to view it as a tool rather than a threat.

Another possible future direction for AI in the classroom could be as a creative collaborator. AI's capability to generate thoughts on any topic in seconds could be utilized in debates and intellectual conversations to help people to think differently and further than they would normally be able to. AI provides out of the box thinking opportunities that normally may not be available.