



Ethical Dimensions of AI in Education: A Machine Learning Analysis of Perspectives from Librarians and Information Specialists, Faculty, and Students at the Cesar Virata School of Business, College of Home Economics, and School of Economics, University of the Philippines Diliman

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BACKGROUND OF THE STUDY

There is a significant gap in understanding how academic professionals, particularly librarians and information specialists, perceive and navigate the ethical dimensions of AI. This study aims to address this gap by examining the ethical dimensions of AI as perceived by librarians, information specialists, faculty, and students at the University of the Philippines Diliman, specifically from the Cesar Virata Business School, School of Economics and College of Home Economics. This research uses machine learning techniques to uncover patterns, trends, and potential mitigation strategies, contributing to the ongoing discourse on AI ethics in education and industry.

RESEARCH OBJECTIVES

- To identify the primary ethical concerns associated with AI in education and industry as perceived by librarians and information specialists, faculty, and students.
- To examine how different academic stakeholders experience and respond to AI-related ethical issues.
- To analyze the specific roles of librarians and information specialists in managing AI ethics within educational institutions.
- To evaluate the effectiveness of current strategies in addressing AI-related ethical challenges in academic and professional contexts.
- To apply machine learning analysis to uncover patterns in the perception, impact, and mitigation of AI ethics among the study's participants.

RESEARCH METHODOLOGY & SAMPLE OF THE STUDY

- Quantitative analysis
- Survey questionnaire
- Cross tabulation with the Chi-Square test used for Hypotheses 2-4 to examine relationships between stakeholder groups and their perceptions of AI ethics.
- Machine Learning Models
KNN, SVM, Random Forest, and DBSCAN

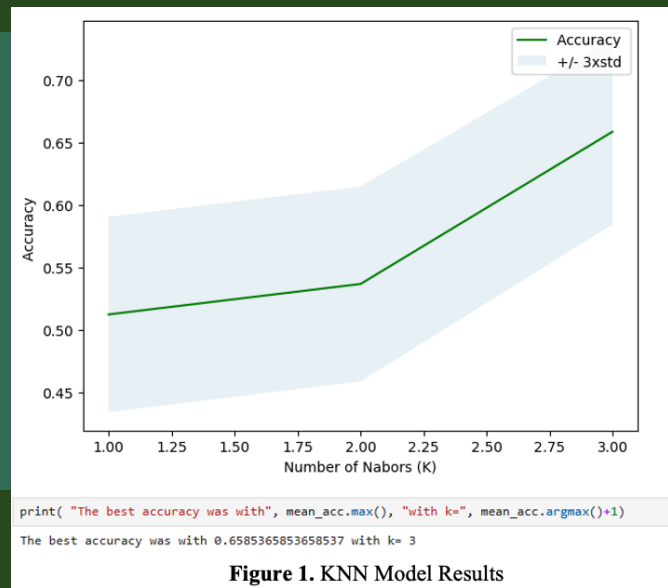


Figure 1. KNN Model Results

The KNN model shows that CVSB and SE students view AI positively for boosting productivity, while CHE faculty, librarians, and information specialists are more concerned about ethical issues and human influence. Business and economics students see AI as a tool for growth, but faculty, librarians, and information specialists emphasize its ethical implications, highlighting that perceptions of AI vary based on roles and experiences.

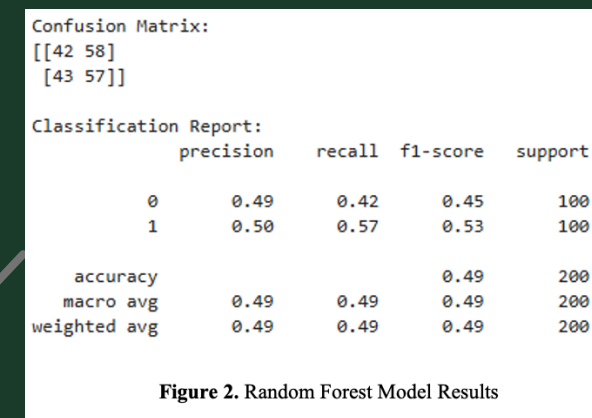


Figure 2. Random Forest Model Results

The Random Forest model struggled to distinguish AI ethics opinions, achieving only 49% accuracy, indicating overlapping views across departments. Faculty, librarians, and information specialists value transparency, while librarians and information specialist also highlight data privacy and fairness. The low performance suggests the need for better features, tuning, or a different algorithm.

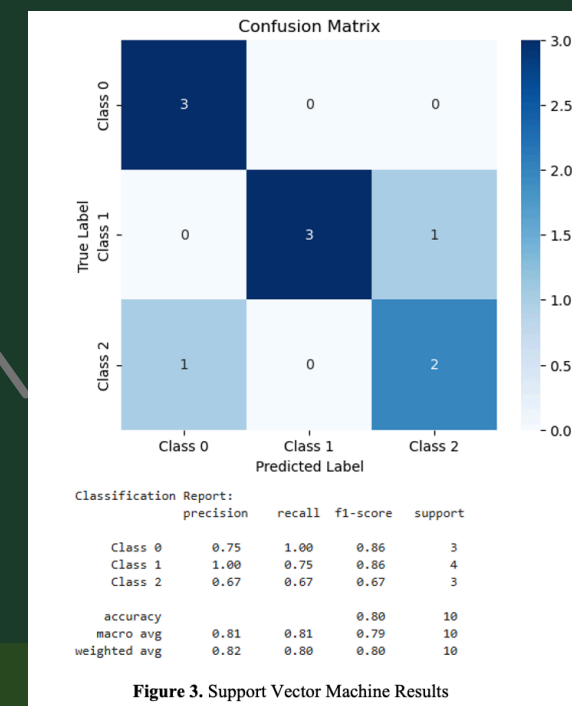
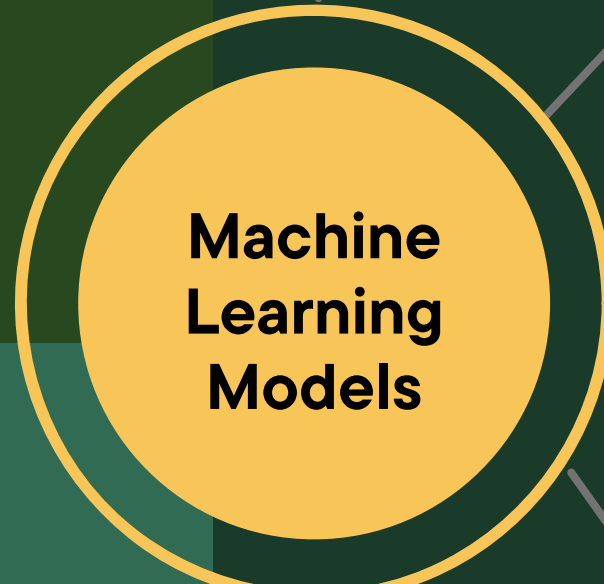


Figure 3. Support Vector Machine Results

The SVM model achieved 80% accuracy in identifying AI supporters and skeptics. Students and CVSB/SE professionals strongly support AI for its efficiency, while librarians, information specialists, and CHE faculty are more skeptical due to ethical concerns. Awareness of AI ethics is growing, even in tech-driven fields, with both classes showing high precision and recall.



RESULTS

TABLE 2. PERCEIVED ETHICAL RISKS OF AI IN EDUCATION AND WORK

Ethical Concern	SA/A (%)	N (%)	DA/SDA (%)	TOTAL (%)
AI increases ethical risks	76.3	18.3	5.5	100
AI-powered grading may introduce bias	64.5	24.6	10.4	100
AI-driven search & recommendations reinforce bias	63.1	26.6	9.9	100
AI threatens job security in education	66.5	15.3	17.7	100
Ethical concerns vary by user role & expertise	79.3	15.8	4.5	100
AI in education should have stricter regulations	76.4	16.3	6.9	100

SA - Strongly Agree; A - Agree; N - Neutral; DA - Disagree; SDA - Strongly Disagree

Table 2 shows that the study reveals that many respondents (76.3%) believe AI poses an ethical risk in learning and the workplace, with over 60% expressing concern about bias in AI-based search and grading, and 66.5% expressing threat to academic job security.

TABLE 3. ROLE-BASED ETHICAL CONSIDERATIONS

Role-Specific Concern	SA/A (%)	N (%)	DA/SDA (%)	No Answer (%)	TOTAL (%)
Faculty: AI reduces critical thinking	10.8	3.0	0.5	85.7	100
Students: AI-driven tools changed learning	50.7	10.8	7.8	30.5	100
Librarians & Info. Specialists: AI improves research retrieval	11.3	3.0	0.5	85.7	100
Librarians Info. Specialists: AI threatens professional roles	16.3	5.9	2.5	75.3	100

SA - Strongly Agree; A - Agree; N - Neutral; DA - Disagree; SDA - Strongly Disagree

Table 3 demonstrates that 85.7% of faculty have not addressed AI-related questions, indicating a lack of engagement. Half of students have experienced academic transformations with AI-based tools, while librarians have mixed opinions on AI's impact on their professions, particularly in research retrieval.

TABLE 4. STRATEGIES FOR ADDRESSING AI ETHICAL CONCERNS

Strategy	Most Supported Approach	Percentage
AI ethics training for all stakeholders	Access to AI auditing tools	50.2
Regular updates on AI ethics policies	Awareness campaigns	44.3
AI transparency and explainability in tools	Required regulations	82.8
Librarians & Info. Specialists involved in AI literacy programs	Strong agreement	9.4
Establishing ethical AI guidelines for Librarians & Info. Specialists	Strong agreement	9.9

Table 4 discloses that 50.2% of participants preferred AI review tools, ethics training, AI clarity and transparency criteria, and integration into curriculums. However, there was a lack of support for librarians and information specialists' participation in AI literacy programs.

TABLE 5. PERSPECTIVES ON AI ETHICS IN EDUCATION AND WORK

Perspective	SA/A (%)	N (%)	DA/SDA (%)
AI raises fairness & bias concerns in grading	71.9	23.2	4.4
AI-generated content should be regulated	79.8	16.3	3.5
AI should complement, not replace humans	87.2	11.3	1.0
There is a need for clearer AI policies	83.3	14.3	2.0
Responsibility for AI risks should be shared	85.7	11.8	2.0
Stakeholders should collaborate on AI ethics	86.2	12.3	1.0

SA - Strongly Agree; A - Agree; N - Neutral; DA - Disagree; SDA - Strongly Disagree

Table 5 demonstrates that 79.8% of respondents favor the restriction of AI-generated content in academic contexts, and respondents were strongly in favor of AI controls. The vast majority (87.2%) of respondents believed that AI should complement human decision-making rather than supplant it. The results also underscore the significance of collaborative policy making, as 86.2% of respondents endorsed the collaboration of academicians, librarians and information specialists, and students.

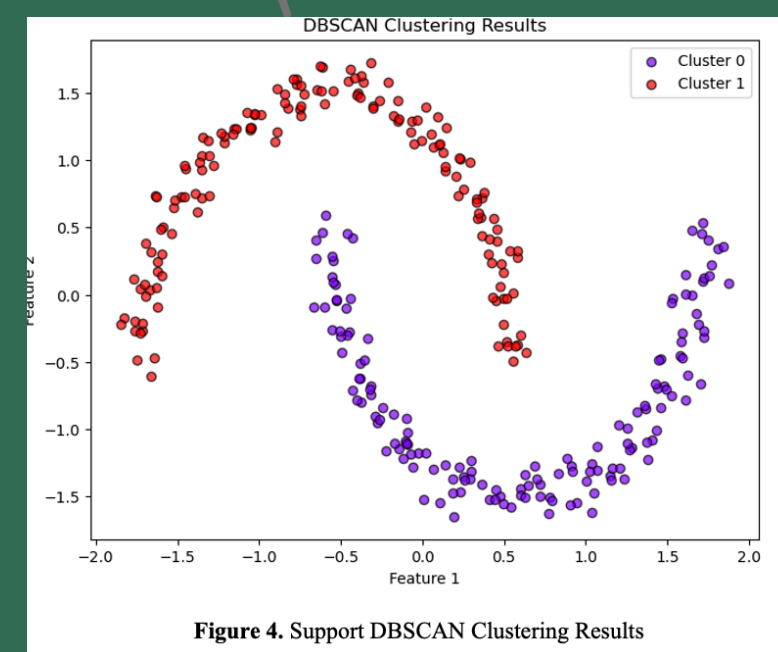


Figure 4. Support DBSCAN Clustering Results

DBSCAN clustering identified two groups: AI Skeptics, concerned about equity and bias, and AI Supporters, primarily students and professionals from CVSB and SE, who view AI as efficient. A small group of faculty members from CVSB and SE expressed a mixture of opinions, demonstrating that ethical discussions about AI are not binary but a continuum.

CONCLUSIONS

- The study shows students are the most familiar with AI, likely due to exposure to AI-driven learning tools. However, concerns about AI risks, grading bias, ethical implications, and job security are prominent. Support for AI regulations is strong.
- Faculty members prioritize job displacement and academic integrity, while students embrace AI but lack ethical awareness. Librarians and information specialists advocate for stricter AI regulations.
- Machine learning models like K-Nearest Neighbors, Random Forest, Support Vector Machine, and DBSCAN were used to analyze AI perceptions. Students generally view AI as an efficient tool, despite concerns about bias, fairness, and work protection. Business professionals and students are most AI-adopting, while librarians, information specialists, and CHE faculty are most resistant.
- The College of Home Economics (CHE) faces significant implications with AI integration issues, highlighting the need for a cautious, inclusive, and values-driven approach. The study suggests facilitating interdisciplinary conversations and promoting transparency, explainability, and human-centered design for future AI adoption.
- The Cesar Virata School of Business and School of Economics see AI as a tool for productivity and decision-making, promoting cross-college collaboration and interdisciplinary learning. However, mixed responses from faculty members highlight both benefits and ethical concerns. CHE as a thoughtful AI adopter should adopt an open, exploratory stance, integrating informed experimentation for responsible AI practices.