



2024 CAE Community Symposium

# Friend or Foe?

Unpacking the Impact of AI on the Future of Teaching and Learning

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# Machine Learning – Education – AI



**Understanding Education 4.0: The Machine Learning-Driven Future Of Learning**

Forbes, March 31, 2022

**Should schools ban or integrate generative AI in the classroom?**

Brookings Institution, August 7, 2023

**New York lawyers sanctioned for using fake ChatGPT cases in legal brief**

Reuters, June 26, 2023

**Combating Academic Dishonesty, Part 6: ChatGPT, AI, and Academic Integrity**

University of Chicago, January 23, 2023

**AI Will Transform Teaching and Learning. Let's Get it Right**

Stanford University, March 9, 2023

**Artificial Intelligence in K-12 Education: Unintended Consequences Lurk, Report Warns**

Education Week, May 28, 2020

**Machine Learning in Education: Improving student outcomes and accelerating research**

Amazon Web Services

# Machine Learning/AI in the Classroom

- Who among us has incorporated/leveraged AI in the classroom?
  - Predictive measures?
  - Learning reinforcement?
  - Academic Honesty Tools?
- Who among us has avoided AI in the classroom?
  - Unsure of AI's place in education?
  - Ethical concerns?
  - Afraid of opening Pandora's Box?
    - Because of AI, must students will not need to know how to: add, write, spell, think. . . It will do this for them!



# Machine Learning/AI in the Classroom

- Does Ai have a place in education (and/or the classroom)?
  - Content generation (based upon program goals and learning outcomes)?
  - Adaptive/personalized learning?
  - Adaptive assessment?
  - Assessment support (e.g., Plagiarism detection, reduced-bias assessment)?
  - Predictive measures (student success)?
- So-called “Smart Learning” promises to make teaching and learning:
  - More flexible
  - More efficient
  - Highly personalized
  - More successful



# Background – Terminology

- Artificial Intelligence (AI)
- Machine Learning (ML)
- Generative AI
- Large Language Models (LLM)
- Neural Network
- Decision Tree
- Support Vector Machine
- Feature

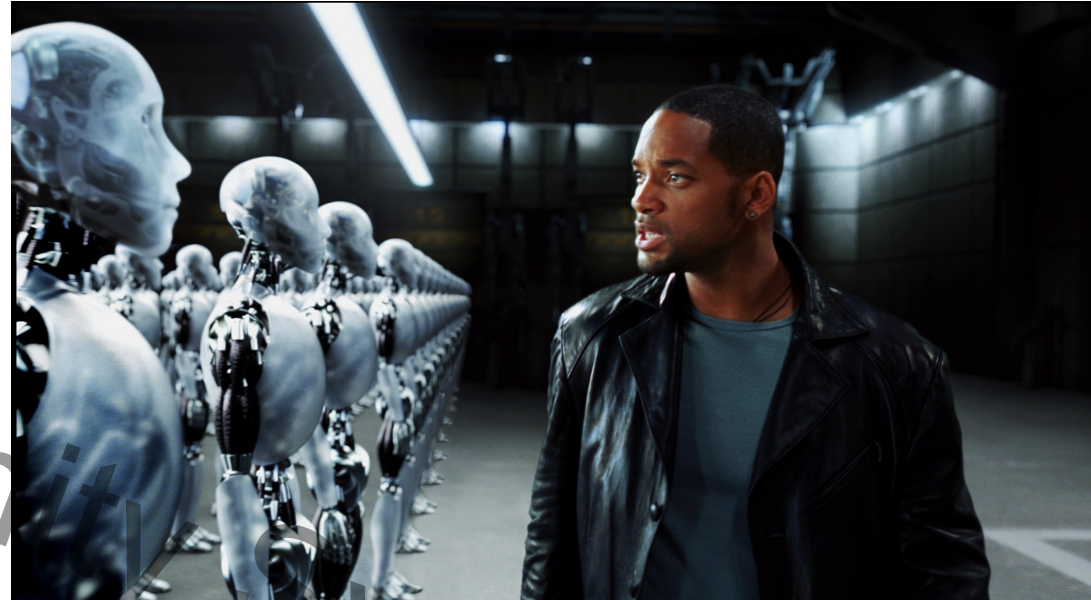
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# AI as Tool

- AI – just one of many technologies that we humans have developed
- Do we see this technology as a tool, or as an end in itself?
  - We can leverage AI to automate teaching (good and bad teaching)
  - Can we leverage AI to produce new manners of teaching?
  - Instead of fear-mongering (my students no longer need to think), can we see AI as a transformative tool, enabling deeper learning?
- Teacher professional development/reinforcement
  - Teacher training (with AI students?!)
  - Assist teacher with developing more personalized feedback for student assignments
  - Predict where students may struggle/fail in certain course modules
  - Potentially reduce/remove bias from assignment assessment process

# Caveat Emptor

- Your model is only as good as your data
- Our data can still contain biases
- Fast is not always good
- Is education a social activity?
  - Can AI replace/replicate that activity?
  - Do we want AI to replace/replicate that activity?



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# Ethical Issues

- Where does the learning model come from?
  - Concerns of authorship & IP rights are playing out in real time
  - Privacy concerns of the student (is the model learning from the student as the AI “teaches”)
- Biased training data produce biased results
- What ethical guardrails do we need in place?
  - UNESCO Global Forum on the Ethics of AI attempting to “get AI governance right”



# Where do we go from here?

- Engage! Highly unlikely that AI in the classroom is “just a passing phase”
- Research, innovate, & evaluate novel uses of AI to support classroom learning
- Participate in robust discussions on acceptable use/applications of AI in the classroom

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# Summary

- Generative AI has currently captured the public's attention/interest
- Generative & Predictive AI can potentially lead to new educational methods
  - Playing direct roles in teaching/learning and support roles for the teacher and the learner
- As with any “new” technology, public concern over how to “get it right” is building
  - Valid questions exist over appropriate use of the technology as well as the data behind the technology
- Teachers & researchers must remain engaged to help guide acceptable use and steer clear of pitfalls

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