Education on the Horizon: Teaching and Learning with Technology
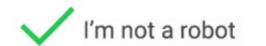
Week 8: Personalized and Adaptive Learning with AI Pt. 1

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Have you experienced these in your everyday life?

- YouTube suggests new videos based on what you have watched
- Your smart phone can automatically create an album with photos with your face in it
- You have to prove "I'm not a robot" during login
- These are possible because of "artificial intelligence" (AI)

✓ I'm not a robot

reCAPTCHA

What is artificial intelligence (AI)?

- AI are intelligent computer programs that mimic the problem-solving and decision-making capabilities of the human mind
- All the current AI applications are narrow and weak:
  - solves a specific kind of problem: e.g., autonomous car, ad optimization, chatbot
  - only acting intelligently in a few areas (pattern recognition and generation), not "thinking" intelligently (self-conscious mind)

Key features of AI

- Autonomy: The ability to perform tasks in complex environments without constant guidance by a user.
- Adaptivity: The ability to improve performance by learning from experience.

Why is it "intelligent"?

- Learning is the acquisition of associations: what input leads to what output
- AI can make inferences about new inputs based on learned associations
- Therefore AI is capable of "learning" based on "past experience", similar to human decision making
- Computer Scientist Explains Machine Learning

What is ML?

- Machine learning (ML) is a subfield of AI, which deals with building systems that improve their performance in a given task with more and more experience or data.

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Two types of ML

- supervised learning: use labeled data as examples to achieve classification and prediction, e.g., identify fake Twitter bots, recognize handwritten numbers

- unsupervised learning: use unlabeled data to reveal hidden structures and generate output similar to input, e.g., write in the tone of Shakespeare, generate image based on text prompt

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Some interesting AI demos

Generative Text

- AI answers any questions

Generative Graphic

- AI draws anything based on your prompt
- AI video

Generative Voice and Sound

- AI deep fake voice
- Generative music

Moving AI (virtual human)

- AI talk to human
- AI talk to AI

Human or AI?

- https://app.humanornot.ai/

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