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How to Design Education with AI for a Cyber Workforce

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AI Researcher

Aamir Lakhani is a leading senior security strategist. He is responsible for providing IT security solutions to major enterprises and government organizations.

Mr. Lakhani creates technical security strategies and leads security implementation projects. Industries of focus include healthcare providers, educational institutions, financial institutions and government organizations. Aamir has designed offensive counter-defense measures for the Department of Defense and national intelligence agencies.

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2 AI and Education

3 Examples of AI in Education

4 Caution (Roadblocks and Pitfalls)

5 Call to Action

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Understanding AI

It’s more than just a buzzword

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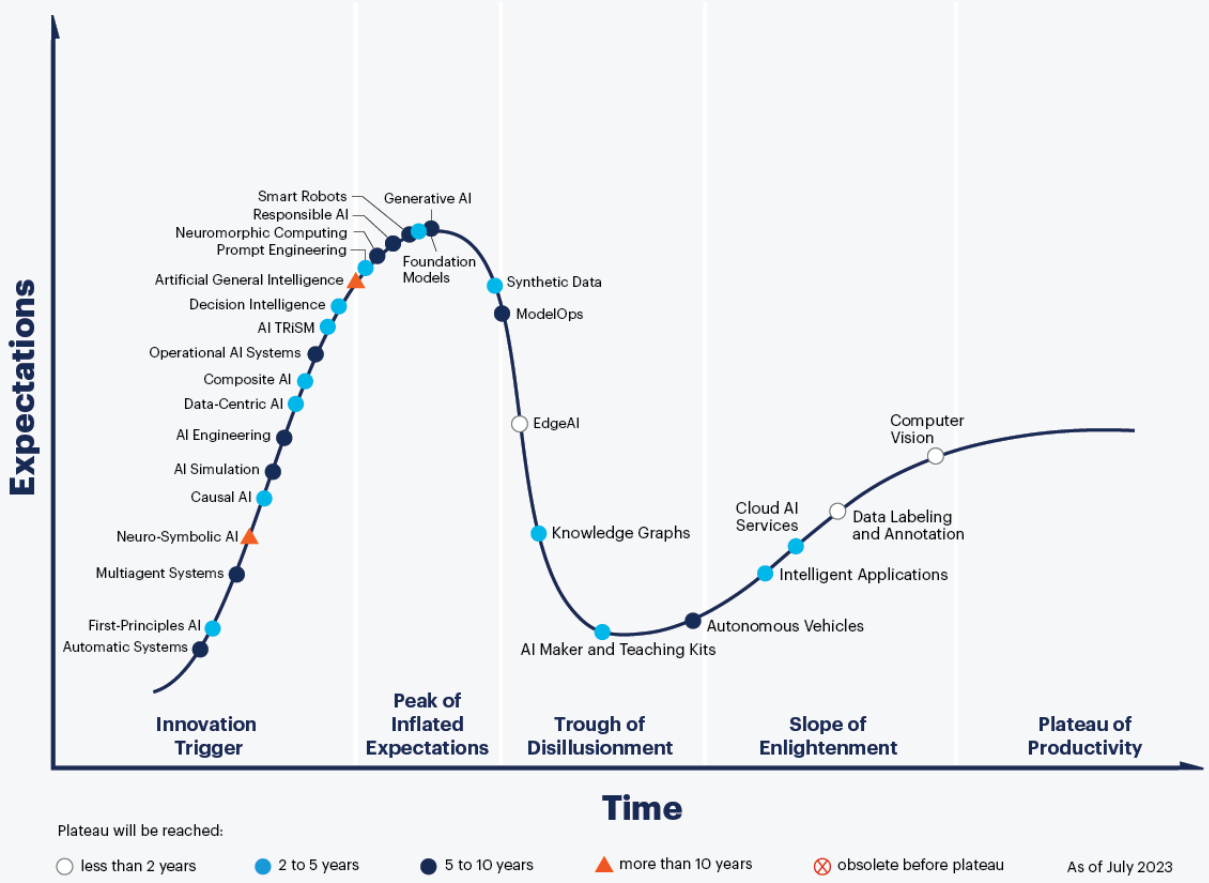
Gartner Hype Cycle for AI

Hype Cycle for Artificial Intelligence, 2023



gartner.com

Source: Gartner
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Gartner

Machine Learning Game

Animal

Mammal

Four Legs

Gray Fur

10lb

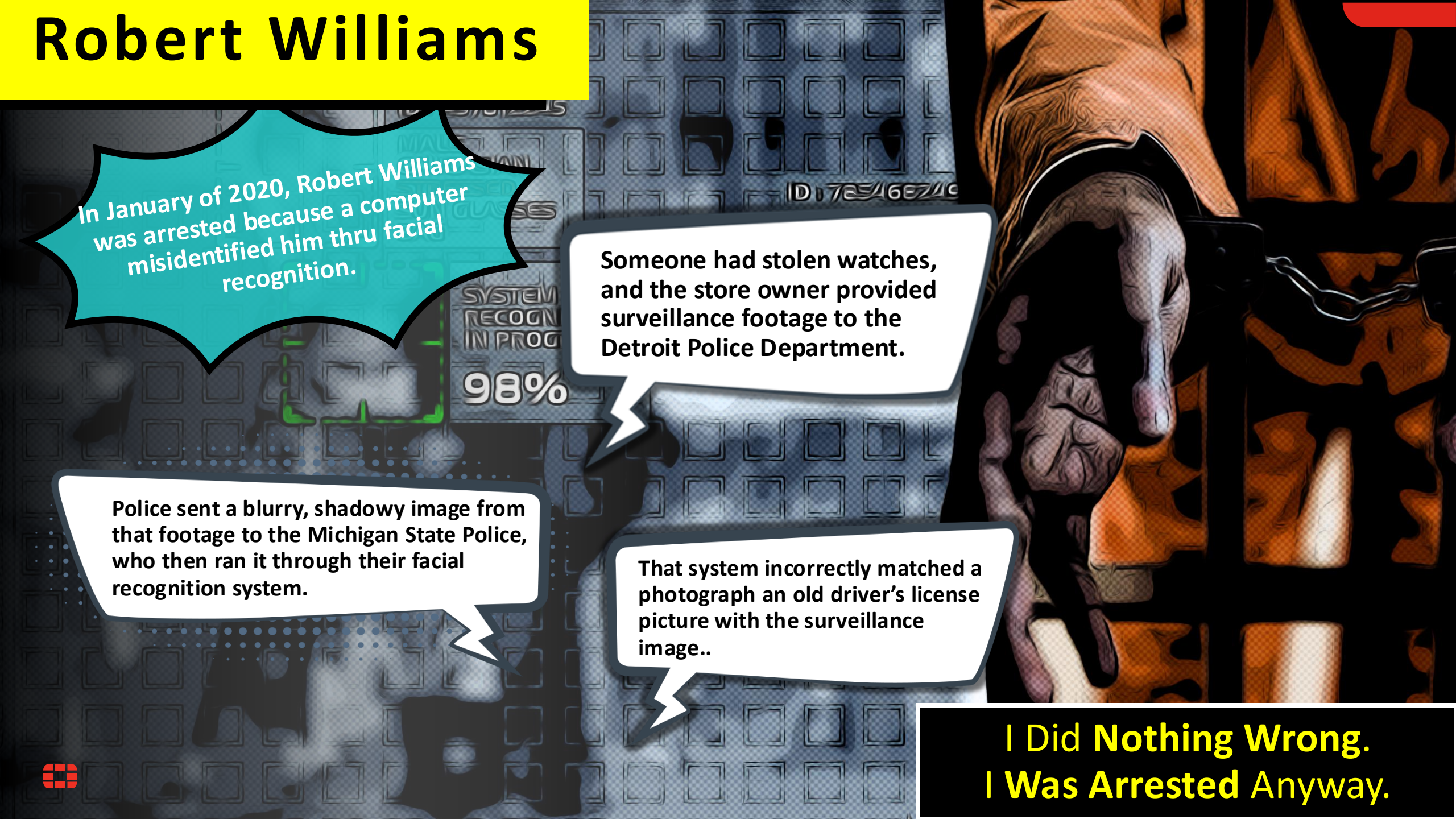
Around 3 lbs

Short Tail

Long Ears

TARGET

Robert Williams



AI and Education

Insights for US Dept of Education

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Integrating AI into Education
(Opportunities, Challenges, and Alignment with Goals)

Opportunities for Innovation
AI enables personalized learning, adaptive assessments, and scalable solutions for diverse learners.

Addressing Challenges
Includes overcoming resistance to AI adoption and addressing equity gaps in access.

Alignment with Educational Goals
AI must be tailored to support curriculum objectives, ensuring relevance and effectiveness.

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Key Insights from the US Department of Education's Report

AI as a Drivetrain
The report compares AI's role in education to an e-bike drivetrain, enhancing efficiency and supporting educators and students.

Public Trust as a Priority
Public trust in AI is essential, requiring transparency in data usage, decision-making, and ethics.

Guidelines for Stakeholders
The report provides actionable recommendations to navigate the integration of AI responsibly.

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Building Public Trust & Ethical AI

- **Transparency in AI Operations:** Clearly communicate how AI processes data and makes decisions to build user confidence.
- **Addressing Equity:** Combat algorithmic bias and ensure access to AI tools for underrepresented communities.
- **Ethical AI Implementation:** Ensure ethical frameworks guide AI development and deployment in education.

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Why use AI in Education

- Faster access for teachers to automate repetitive tasks
- Concierge help students
- Adaptive and personalized learning
- Can help support students with disabilities
- Continuous Feedback
- Preparation for an AI World

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Top AI Apps in Education

TOP AI INSTRUCTOR TOOLS

- MagicSchool.ai
- Eduaide.Ai
- Khanmigo
- Photomath
- Copyleaks
- ClassDojo
- Google’s Generative AI for Educators

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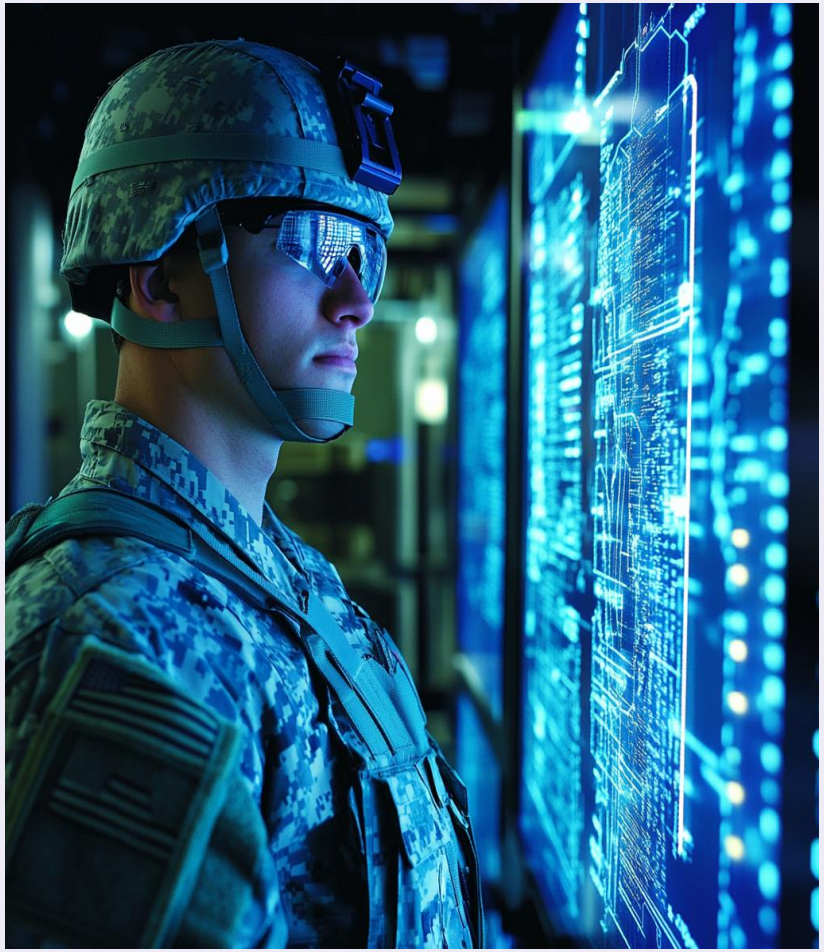

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Examples

Real world success stories

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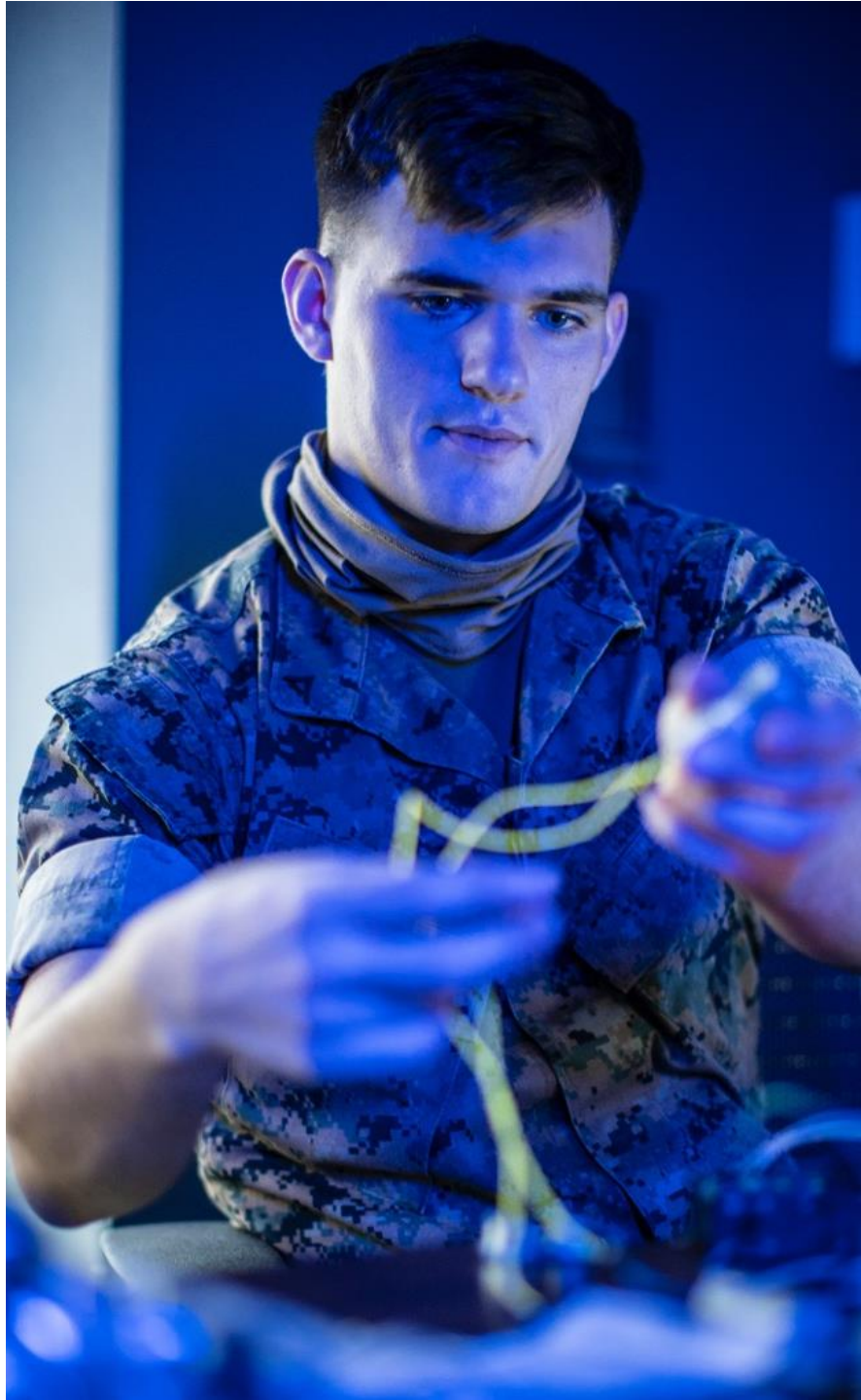
AI Applications in Adult Education

- **Personalized Learning Pathways:** AI platforms like Coursera and edX use machine learning to recommend courses tailored to individual learners.
- **Language Learning Support:** Tools like Duolingo leverage AI for adaptive learning, offering personalized feedback for adult learners.
- **Workplace Training:** AI-powered tools like LinkedIn Learning provide skill-focused training aligned with job market needs.



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Pearson AI Initiatives

Generative AI as starting points for items, alt text, translations

AI-powered chat tutor

AI-powered interactive guidance for writing practice

Microsoft

Transforming and scaling AI skilling and learning for learners, workers, and employers

Pearson

Assessment Development | **Academic guide** | **Essay skill building** | **Microsoft Partnership**

The Danger Drone

- **Hands on workshops** that incorporate AI lessons and suggestions into real world make the experience of the educators invaluable. Each student utilized AI in a custom way making each solution custom.

- Student incorporated radio (**Bluetooth** and **WiFi**) hacking tools on drones as well as simulated radio frequency attacks that were from classroom studies.

- Students learned how to automate collection of telemetry into cloud services and use that data for attack analysis on **SIEM** and **SOAR** products.

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Caution

When AI Fails

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What’s wrong with this picture?

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Ineffective Use of AI in Adult Education

- **Algorithmic Bias:** AI tools in education have reinforced stereotypes, disadvantaging underrepresented groups.
- **Poor Data Quality:** Inaccurate or insufficient data has led to irrelevant recommendations for adult learners.
- **Lack of Transparency:** Educators and learners struggle to trust systems with opaque decision-making processes.

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Lawsuits and Liabilities

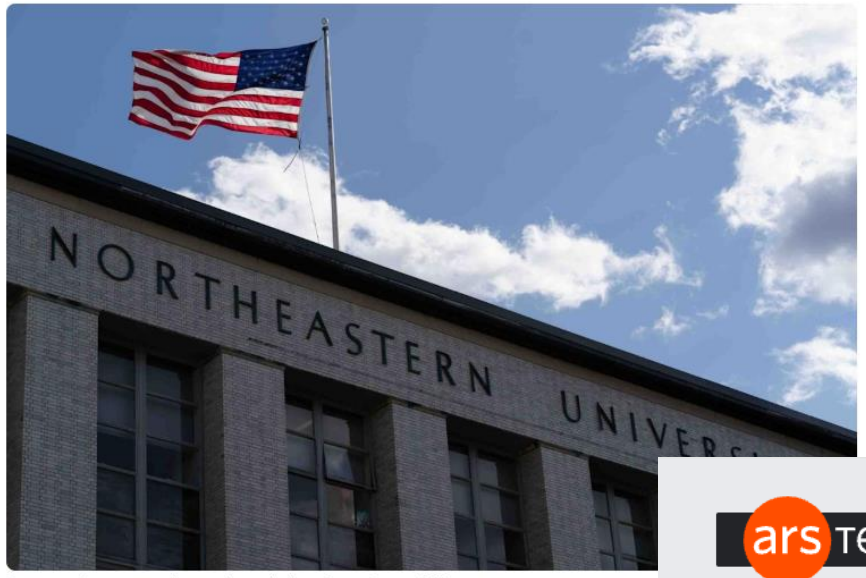
FORTUNE

Northeastern college student demanded her tuition fees back after catching her professor using OpenAI's ChatGPT

Beatrice Nolan

Thu, May 15, 2025 at 6:29 AM CDT · 3 min read

1.9k



Some students are not happy about their professor's use of AI.

NBC NEWS TRUMP ADMIN DIDDY TRIAL POLITICS U.S. NEWS SPORTS LOCAL MEMORIAL DAY SALES WATCH

ARTIFICIAL INTELLIGENCE

Parents sue son's high school history teacher over AI 'cheating' punishment

The legal complaint said using artificial intelligence to assist in crafting an outline didn't violate school rules at the time.

Judge Rules in Favor of School That Gave Student a Bad Grade for Using AI

Parents of a Massachusetts high schooler had sued the district in order to get their son's grade raised.

By **Todd Feathers** Published November 22, 2024 | Comments (139)

LATEST NEWS

ars TECHNICA SECTIONS FORUM SUBSCRIBE SIGN IN

FOUR SCORE AND SEVEN BEERS AGO

Why AI writing detectors don't work

Can AI writing detectors be trusted? We dig into the theory behind them.

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Call to Action

Driving Forward with AI in Education

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Conclusion and Call to Action

(Driving Forward with AI in Education)

- **Key Takeaways:** AI presents transformative potential for education when implemented responsibly.
- **Ongoing Collaboration:** Educators, policymakers, and technologists must work together for impactful integration.
- **Call to Action:** Focus on equitable, transparent, and ethical adoption of AI in educational systems.

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How to build an cyber workforce with AI

Task	Description	Deliverable
Choosing training	Free resources and cheap resources are available for cyber training	Educators must provide a unique experience that gets students excited and motivated.
Getting the right type of skills	Cyber training is concentrating around pen testing	Students need to exposed to cloud, container, and advanced networking concepts. In addition topics such as privacy, compliance, and supply chain cannot be ignored.
Interactive and Immersive	Students are not getting updated, relevant real-world experience	Make It / Break It, Capture The Flag, and IR workshops need to be more incorporated into training.
Scenario Design	Students need near real-time feedback and adjustment on training progress and skill validation	AI built Scenario blueprints and story design
Job placement	Job matching for the right candidates with	AI Agents that help with job screening and requirement validation.
Threat Briefings	Provide access to a number of labs on ImmersiveLabs formulated around the NICE framework to train the team on the platform	Notebook and briefing AI interaction to digest large amounts of information.
Career Advancement	If you are not chasing the next big thing, you are behind and lost already.	Students and educators need to be aware of trends and how to reach students. They can do this by creating and curating their own AI models.

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