

The Use of Artificial Intelligence in Higher Ed

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Learning Objectives

- What is AI?
- How is AI reshaping higher ed?
- Benefits and impacts
- Future state

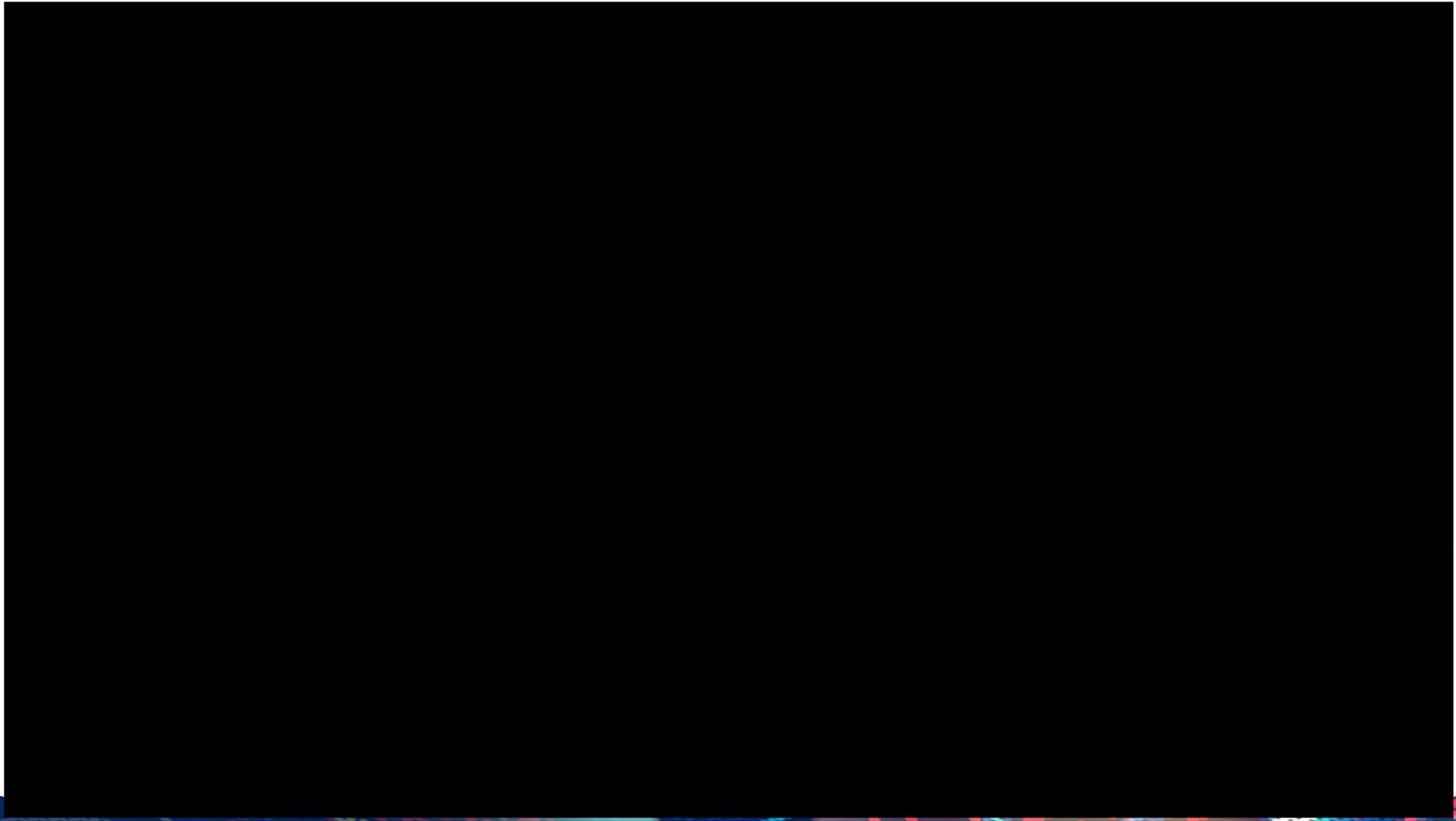


Meet Virgil

- Father of 5
- Softball and Basketball coach
- Graduate of Seton Hall University
- Higher Ed for 25 years
- Nelnet for 7 years
- Covering Pacific and Midwest

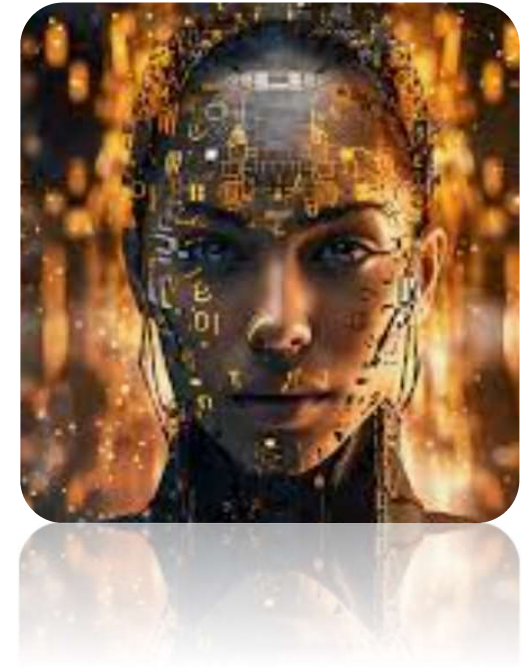


AI-Generated Video



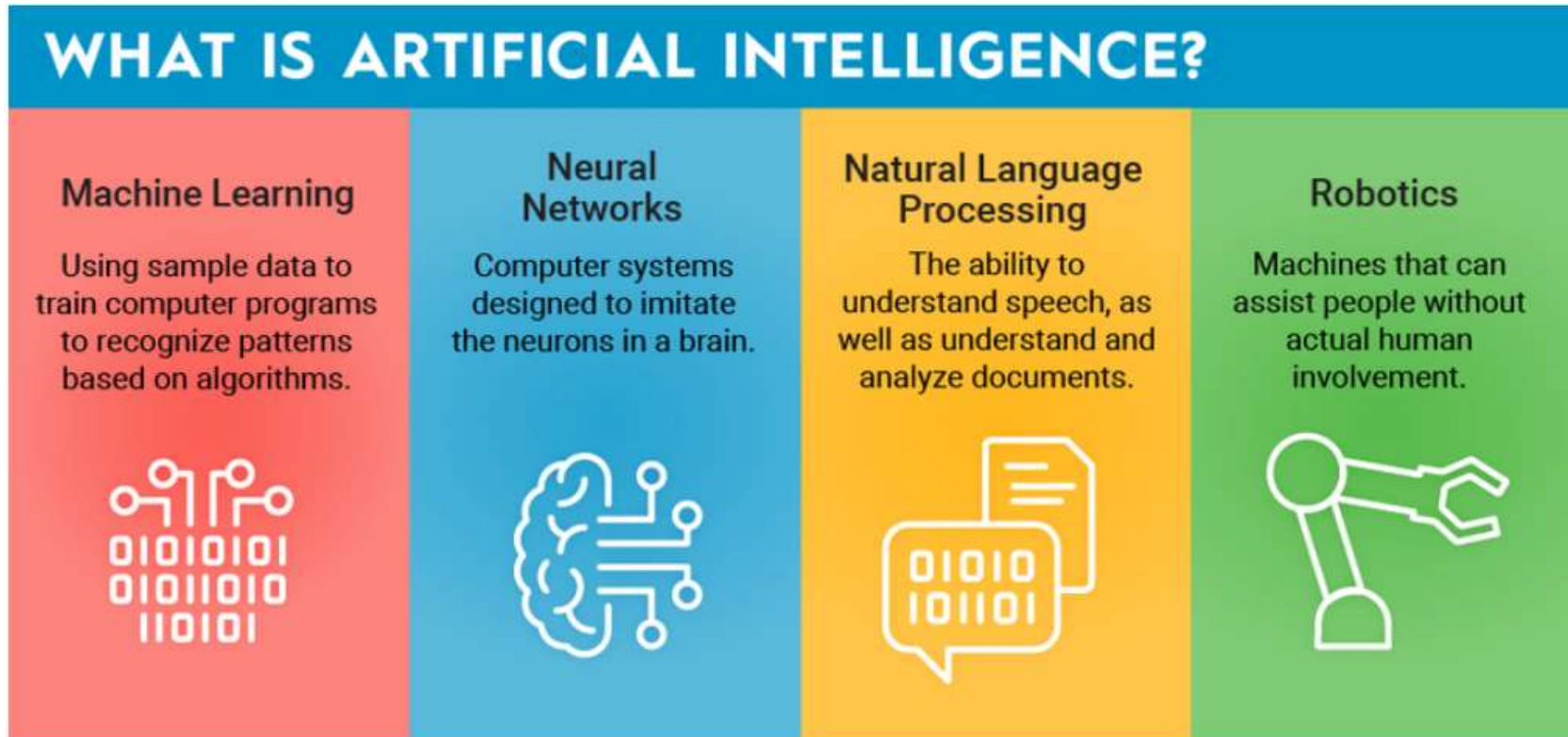
Artificial Intelligence

- AI isn't the “threat”
- It's a tool, nothing more
- Legacy Code Tools
- Daily Tasks



Artificial intelligence technology allows computers and machines to simulate human intelligence and problem-solving capabilities. Algorithms are part of the structure of artificial intelligence, where simple algorithms are used in simple applications, while more complex ones help frame strong artificial intelligence.

Artificial Intelligence

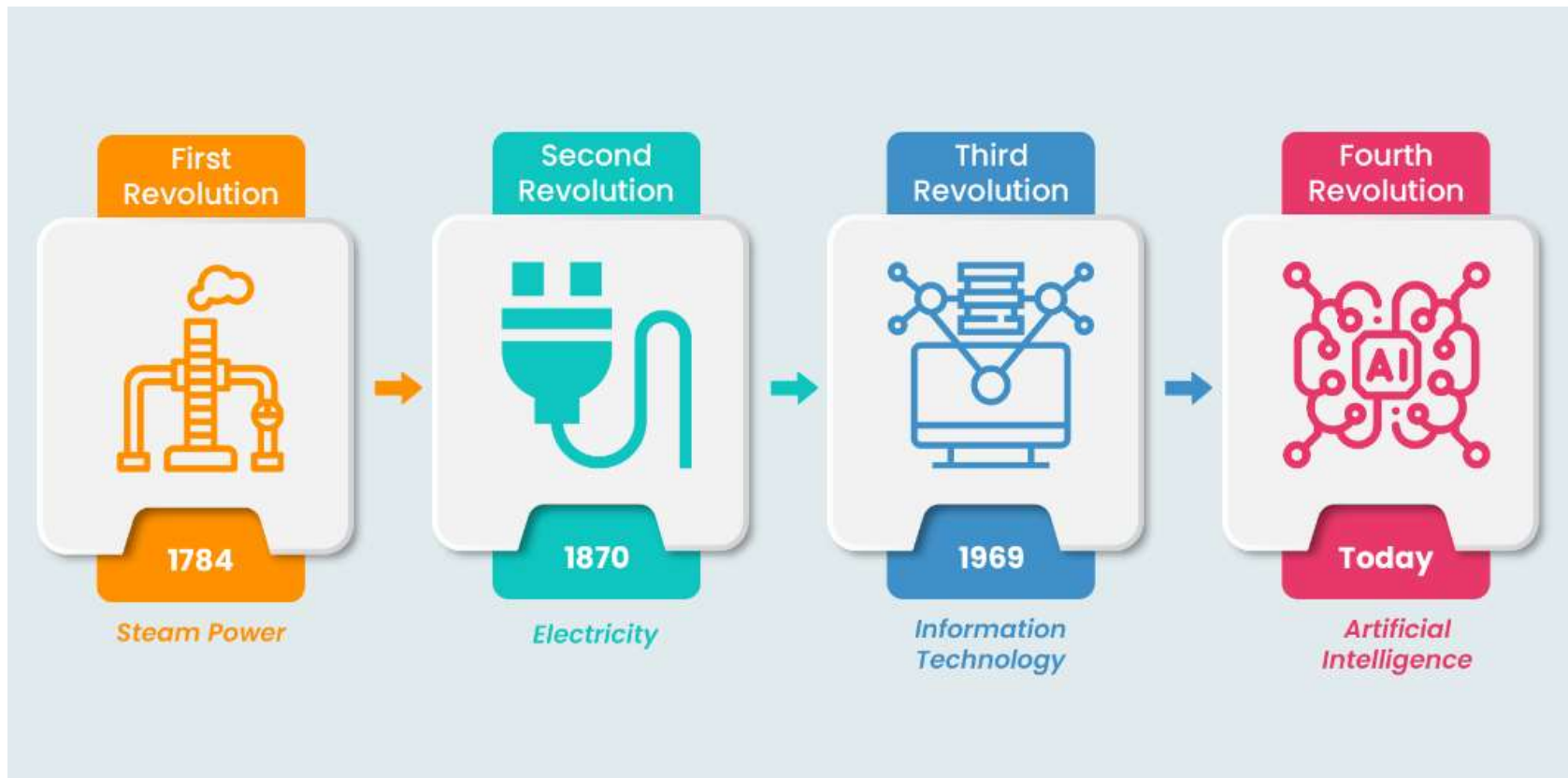


History of Communication

- Sign and body language
- Speech
- Hieroglyphics and written word
- Printing press
- Typewriter
- Computers and the internet
- Search engines such as Google
- Large language models (LLMs) such as ChatGPT



Evolution of AI



In one word,
what does AI
mean to you?

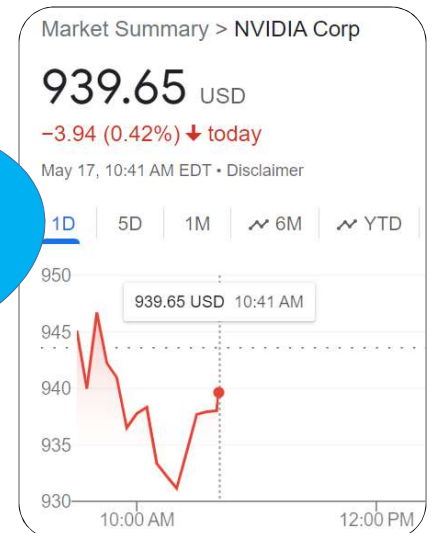


AI by the Numbers

- AI market size is expected to reach **\$407 billion by 2027**
- AI will have an estimated 21% net increase on the United States GDP by 2030
- Over 75% of consumers are concerned about misinformation from AI
- **ChatGPT had 1 million users within the first five days of being available**
- One in 10 cars will be self-driving by 2030
- 64% of businesses expect AI to increase productivity

180

211%



Industry-Specific Applications



Consumer goods and retail

- Providing virtual fitting rooms
- Scheduling delivery and installation
- Providing in-store product-finding assistance
- Optimizing demand prediction and inventory planning
- Generating novel product designs



Manufacturing

- Serving as expert copilot for technicians
- Allowing conversational interactions with machines
- Providing prescriptive and proactive field service
- Enabling natural language troubleshooting
- Assessing warranty status and documentation
- Understanding process bottlenecks and devising recovery strategies



Media and entertainment

- Providing intelligent search and tailored content discovery
- Writing engaging headlines and copy
- Providing real-time feedback on content quality
- Curating personalized playlists, news digests, and recommendations
- Enabling interactive storytelling, driven by viewer choices
- Delivering targeted offers and subscription plans

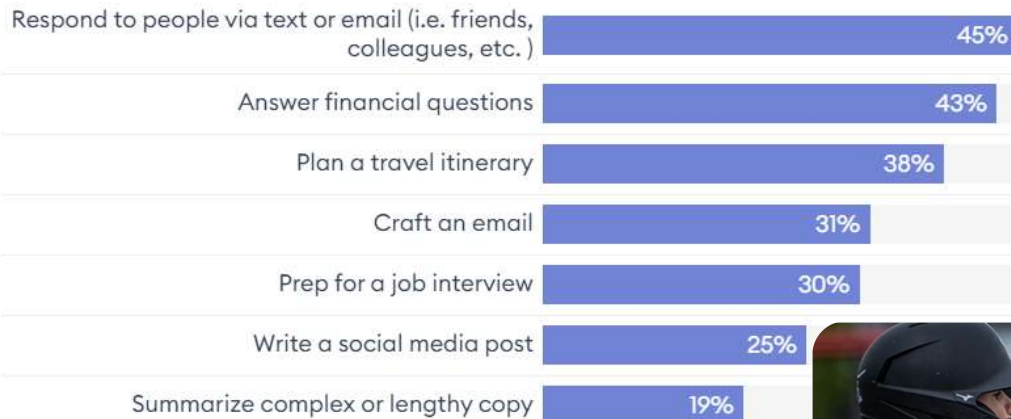


Financial services

- Uncovering potential trading signals and alerting traders to vulnerable positions
- Accelerating underwriting decisions
- Optimizing and rebuilding legacy systems
- Reverse-engineering banking and insurance models
- Monitoring for potential financial crimes and fraud
- Automating data gathering for regulatory compliance
- Extracting insights from corporate disclosures

Application to Our Daily Lives

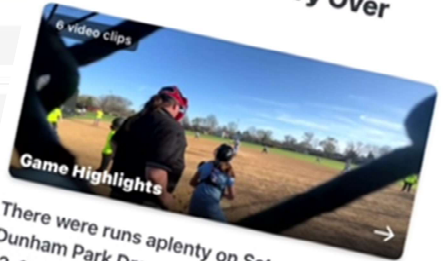
Most Common Way Consumers Plan to Use Artificial Intelligence



Strikes 11 FINAL 12 Dunham Park Dragons
Replay...meStream

Recap Video Plays Box Score Info

Hits Aplenty In Dunham Park Dragons 10U Victory Over Strikes



There were runs aplenty on Saturday, as Dunham Park Dragons 10U outshone Strikes 12-11. Dunham Park Dragons 10U collected four hits, while Strikes had 10.

Dunham Park Dragons 10U got on the board in the bottom of the first inning after **Josephine L** singled, and **Greta W** stole home, each scoring one run.

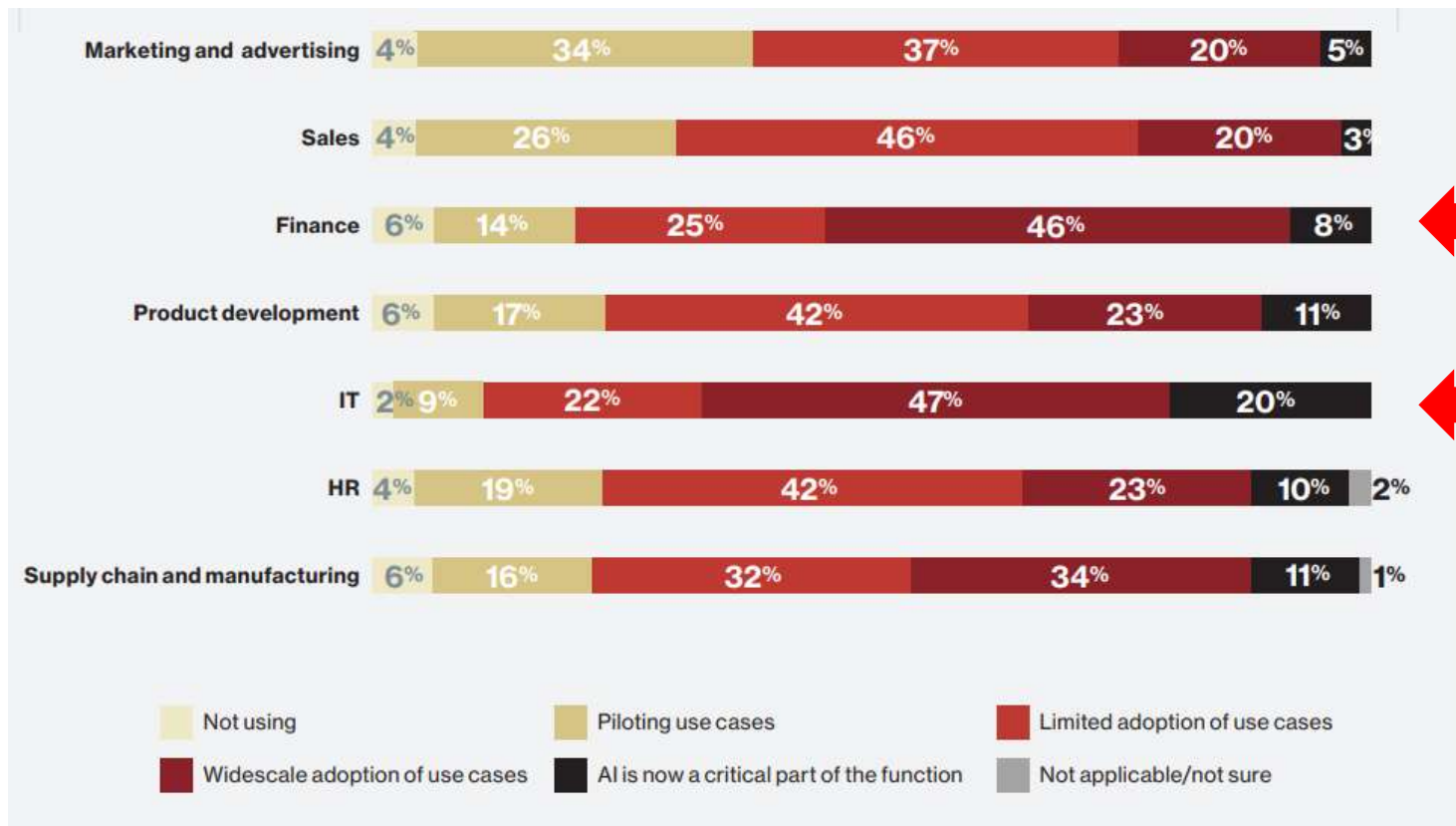
Forbes
Advisor

Workforce & Employment Impacts

- 77% are concerned that AI will cause job loss in the next year
- 400 million workers could be displaced because of AI
- Research estimates **AI will create 97 million jobs**
- Software engineers and data engineers are being recruited for AI support
- The manufacturing industry is expected to see the largest financial impact due to AI



AI Adoption



AI Adoption Statistics

- Half of U.S. mobile users use voice search every day
- AI is expected to see an annual growth rate of **37% from 2023 to 2030**
- A quarter of companies are adopting AI because of labor shortages
- *Chinese companies have had the highest adoption rate of AI*



Unique Aspects of HE

- Adoption of technology
- Innovation and research
- More decentralized ecosystem
- Collaborative by design
- Data analytics



How is AI reshaping Higher Ed?

ADMINISTRATIVE

AI tools are being used to crunch data on recruitment, admission and retention, to aid in decision-making processes and to assess productivity and performance.

RETENTION

AI tools are used to provide self-service chat bots that flag at-risk students, recommend courses, increase motivation and predict student performance.



TEACHING

AI tools support are being used to provide adaptive and automated assessments, practice opportunities, personalized tutoring and feedback and content recommendations.

AI tools are being used to generate content, write code, resolve accessibility issues, reconfigure writing processes and detect plagiarism.

RESEARCH

AI tools are being used to sift through large data sets to identify patterns, build models, recommend relevant articles and prepare manuscripts for publication.



Higher Ed is Most Trusted to Handle AI

- 49% of respondents said they trust higher education institutions “somewhat” or “a lot” to use AI responsibly.
- The report surveyed more than 2,100 adults in Feb. 2024 about Americans’ attitudes toward artificial intelligence.

“It has never been more important for leaders in higher education to participate in conversations about AI, as society will increasingly depend on educated graduates who will keep ethical use of AI at the forefront of technology innovation.”

Nariman Farvardin
President, Stevens Institute of Technology



Are you using
Chatbots at
your campus?



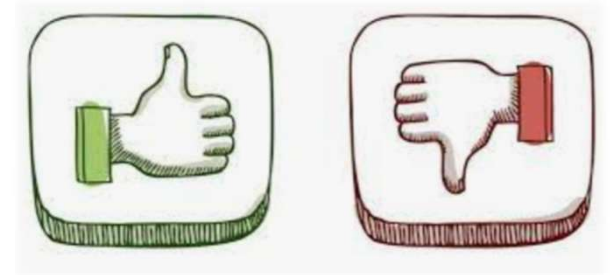
Benefits & Drawbacks

BENEFITS

- ✓ Manage FAQs
- ✓ Reduce manual work
- ✓ Increase efficiency
- ✓ Data analysis and insights
- ✓ Impact retention, enrollment
- ✓ Impact payments
- ✓ New work opportunities and skill development

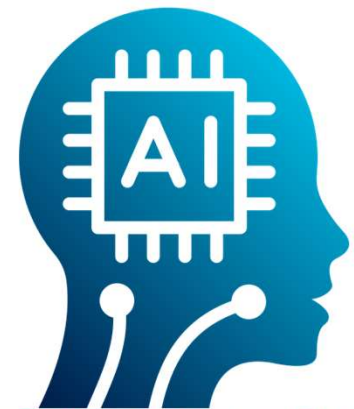
DRAWBACKS

- ✓ Reduce FTE
- ✓ Job displacement
- ✓ Cybersecurity risks
- ✓ Data privacy
- ✓ Cost implications
- ✓ Technology investments

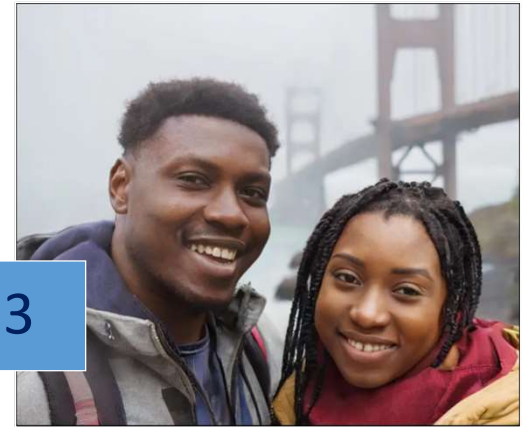


What is Generative AI?

Generative AI, or generative artificial intelligence, **is a type of artificial intelligence (AI) that uses neural networks to create new content based on inputs like text, images, audio, and video.** Generative AI models use foundation models, which are large AI models that can perform tasks like summarization, classification, and Q&A. Foundation models can be adapted for use cases with little example data, and require minimal training.



Which of these is Generative AI?



Generative AI in Practice

Before



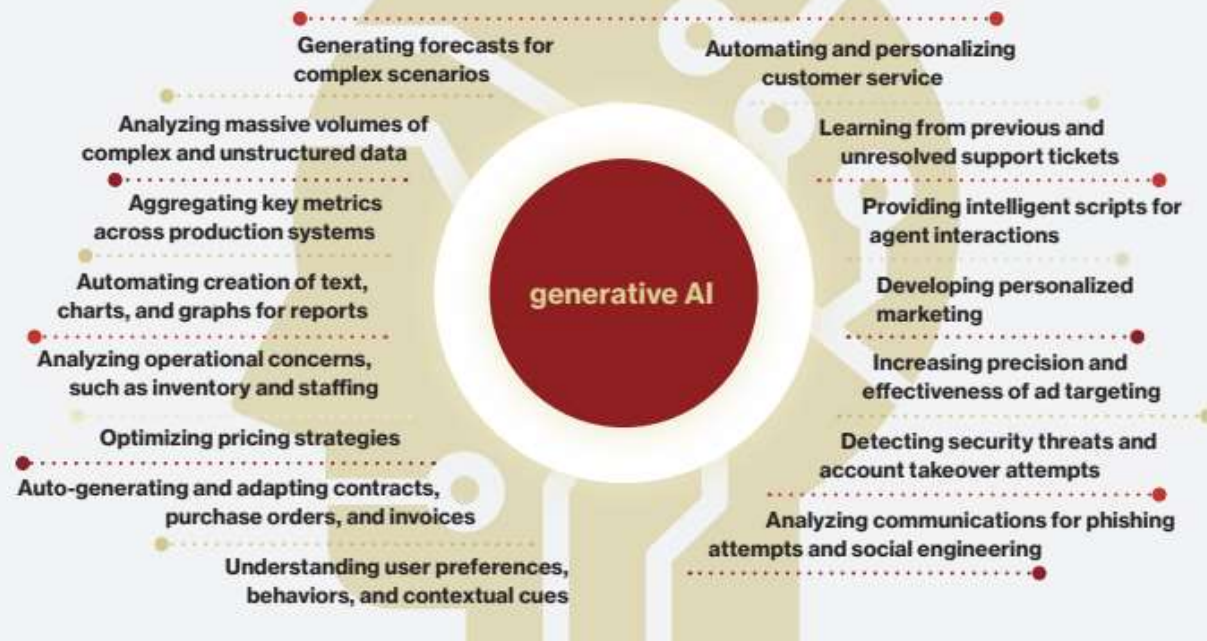
After



Generative AI Applications

Figure 1: Enterprise applications and use cases for generative AI

These are just a few of the business functions compellingly addressed by generative AI.



Working with Your Partners

- Is AI part of their vision, strategy?
- How are they implementing AI in their company?
- How can AI help your partnership?
- What innovations are forthcoming?
- Can they streamline your practices?



Summary



AI IN HIGHER EDUCATION: WHAT REALLY IS AT STAKE?

FOCUS ON:

- ✓ CRITICAL THINKING
- ✓ STORYTELLING
- ✓ FINDING MEANING



PRIVACY CONCERNS



SOME COUNTRIES BANNING CHAT GPT

BOOMING EMERGENCE of **CHAT GPT**



HIGHEST AMOUNT of USERS in USA

ACCESS: AI ALLOWS DET TO BE CHEAPER



HUMAN-LED DESIGN SUPPORTED BY AI

AI

TRANSFORMING THE WORKFORCE

IN-PERSON INTERACTION IS STILL VALUABLE



FOCUS ON IN-PERSON EDUCATION



HOW DO WE TEACH FOR THIS NEW ENVIRONMENT?

PREPARE STUDENTS FOR THIS NEW WORLD

DEVELOP SKILLS IN PROMPT ENGINEERING

RESPONSIBLE AI



REGULATORY STANDARDS ARE CHANGING



AI PROMPTS US TO TEACH CRITICAL THINKING

HELP STUDENTS GAIN SELF-KNOWLEDGE



ADAPT EVALUATION CRITERIA



DYNAMIC RELATIONSHIP WITH CHAT GPT

COULD AI LEVEL THE PLAYING FIELD?



THE WAY STUDENTS WRITE WILL CHANGE

AI DETECTION

HOW CAN WE USE AI AS A WRITING TOOL INSTEAD OF A REPLACEMENT?

ACCESS



HOW CAN WE USE AI TO IMPROVE ACCESS TO EDUCATION?

COMMUNITY-TESTED

ADDRESS COST



A UNIVERSITY EXPERIENCE IS MORE THAN WHAT HAPPENS IN THE CLASSROOM

PEOPLE ARE TAUGHT HOW TO THINK

THE VOLUME OF INFORMATION INFORMING MODELS IS VERY HIGH



THE WAY WE UNDERSTAND WRITING WILL CHANGE

HIGHER STANDARDS & EXPECTATIONS FOR STUDENTS



GENERATIVE AI



UNIQUE STANDARDS DEVELOPED FOR RESPONSIBILITY

ADDRESS BIAS

NEW LAYERS OF TRUST & SAFETY TO CONSIDER

ADMISSIONS ESSAYS AUTHENTICITY CONCERNS ARE

AN EDGE

Nelnet Campus Commerce by the Numbers

1.1K

Institutions Partnered With

8M

Students Supported

34M

Payments Processed Annually

Unlimited Solutions Campus Wide

Online and on-campus payment technology built for every level of higher education.



Business Office

Help students stay enrolled and on track, while allowing your staff to be more efficient.



Information Technology

Maintain the highest levels of payment security and integrate with systems already in place on campus.



Student Services

From tuition payment plans to mobile payments, we'll help you keep students enrolled, engaged, and focused on their education.



Enrollment Management

Attract students to your institution by offering affordability with payment options.

Resources

Language Models are Few-Shot Learners:

<https://arxiv.org/pdf/2005.14165.pdf>

Large Language Model are Zero Shot Reasoners:

<https://arxiv.org/pdf/2205.11916.pdf>

Chain of Thought Prompting Elicits Reasoning in Large Language Models:

<https://arxiv.org/pdf/2201.11903.pdf>

Self-Consistency Improves Chain of Thought Reasoning in Language Models:

<https://arxiv.org/pdf/2203.11171.pdf>

Tree of Thoughts: Deliberate Problem Solving with Large Language Models:

<https://arxiv.org/pdf/2305.10601.pdf>

Chain-of-Table: Evolving Tables in the Reasoning Chain for Table Understanding:

<https://arxiv.org/pdf/2401.04398.pdf>

Graph of Thoughts: Solving Elaborate Problems with Large Language Models:

<https://arxiv.org/pdf/2308.09687.pdf>

A Hazard Analysis Framework for Code Synthesis Large Language Models:

<https://arxiv.org/pdf/2207.14157>

Taxonomy of Risks posed by Language Models:

<https://dl.acm.org/doi/10.1145/3531146.3533088>

