Heartland Innovations in Interprofessional Practice and Education Summit • July 17-18, 2025 ONLINE

Transforming Futures:
Innovation and Disruption in Interprofessional Health Care and Education

DES MOINES UNIVERSITY
MEDICINE & HEALTH SCIENCES

Disclosure

I do not have any financial relationships with ineligible companies to disclose.

I will be discussing and demonstrating off-label use of a commercial product.

APPLIED ARTIFICAL INTELLIGENCE

TRANSFORMING TEACHING-LEARNING-RESEARCH-WORKFORCE

DR. ROBBIE MELTON
PROVOST &
VP SMART AI TECHNOLOGIES

Tennessee State University- SMART Center
‘AI for ALL’ Applied Research Center
for Education Innovations

AI in Education & Research

Inclusive Approaches and Collaborative Innovations Across Disciplines

Artificial Intelligence (AI) is revolutionizing education and research across multiple dimensions, empowering educators with advanced tools and capabilities that were previously unimaginable.

TENNESSEE STATE UNIVERSITY

ARRIGHI AI-C2 UTILIZATION SPECTRUM

Five-Stage Learning Spectrum for Utilizing Artificial Intelligence (A.I.) in Education

Convenience 2 Competence

This spectrum outlines the progression of learner engagement with AI tools in education, fostering both **cognitive enrichment** (deeper understanding) and **self-efficacy** (confidence in using AI). As they progress through the stages, learners develop critical thinking skills, problem-solving abilities, and the confidence to leverage AI for transformative learning experiences.

Dr. Nicole Arrighi
Assisant Dean, Office of Teacher Education

Stage 1: Passive Consumer (Convenience)

Description: Learners primarily use AI for basic tasks like content access, definition searches, or simple question-answering through virtual assistants.

- Cognitive Enrichment: Limited. AI acts as a convenient information retrieval tool.

- Self-Efficacy: Low. Learners rely heavily on AI without critically evaluating the information or understanding its capabilities.

Stage 2: Active Inquirer (Exploration)

Description: Learners begin to explore AI's functionalities beyond basic tasks. This might involve using AI-powered simulations, interactive tutorials, or personalized learning recommendations.

- Cognitive Enrichment: Moderate. Learners engage with AI to explore topics and practice skills in a more interactive way.

- Self-Efficacy: Developing. Learners gain basic confidence in using AI tools for specific learning tasks

Stage 3: Critical Evaluator (Analysis)

Description: Learners develop a critical lens towards AI-generated content and recommendations. This stage involves fact-checking, comparing AI outputs with credible sources, and understanding AI biases.

- Cognitive Enrichment: High. Learners use AI alongside other resources to deepen their understanding and develop critical thinking skills.

- Self-Efficacy: Emerging. Learners become more confident in using and evaluating AI tools for effective learning.

Stage 4: Collaborative Creator (Application)

Description: Learners leverage AI to create original content, solve problems collaboratively with AI assistants, or explore complex concepts through AI visualizations.

- Cognitive Enrichment: Very High. AI becomes an active partner in the learning process, facilitating collaboration and deeper learning experiences.

- Self-Efficacy: High. Learners demonstrate confidence in utilizing AI for various learning purposes and possess the skills to optimize its benefits.

Stage 5: Autonomous Innovator (Mastery)

Description: Learners become self-directed in their learning journey, using AI to explore novel avenues, conduct independent research, or even develop their own AI-powered learning tools.

- Cognitive Enrichment: Exceptional. AI empowers learners to become self-directed innovators and problem solvers.

- Self-Efficacy: Mastery. Learners possess a deep understanding of AI's capabilities and limitations, utilizing it strategically to enhance their learning and potentially contribute to the future of AI in education.

ARTIFICIAL INTELLIGENCE

P.A.C. IT UP

P. PROMPT

When using an AI assistant, be careful not to simply ask vague, open-ended questions. Form specific, well-thought-out prompts to steer the conversation productively and avoid outputs containing unreliable information. Clarify if needed.

A. ASSESS

It's important to carefully Assess AI tools before use. Learners should evaluate options for accuracy, sources of information, capabilities, and limitations. This involves comparing AI outputs with credible sources to develop a critical understanding of its strengths and weaknesses, as suggested in the Arrighi AI "Convenience to Competency" (C2) Utilization Spectrum.

C. CITE

Make sure to properly Cite any AI-generated content or insights used within work to acknowledge the source and allow for verification. The AI Prompt for Education Rubric emphasizes the importance of ethical considerations, including proper citation practices.

Artificial intelligence (AI) is transforming education by providing personalized learning experiences, enhancing cognitive engagement, and supporting critical thinking. Artificial intelligence holds great potential to enhance learning when utilized properly. This guide aims to help students and faculty safely and ethically "P.A.C. it Up!" when using AI tools for academic purposes. The term "P.A.C. it Up" stands for Prompt, Assess, and Cite, which are essential steps for effectively using AI in research and education.

Mr. Marcus Horton
Academic Technology Coach
Smart Innovation Technology Center,2024

Educational Aid for Artificial Intelligence

ai-tnstatesmartcenter.org

TENNESSEE STATE UNIVERSITY

TENNESSEE STATE UNIVERSITY

Developed by Dr. Robert Hassell
Senior Executive Director
Smart Innovation Technology Center, 2024

ASCEND-AI

ELEVATING LEARNING WITH SMART AI PROMPTS

Create AI prompts that are pedagogically sound and promote progressive skill development

Evaluate the quality of AI prompts across multiple dimensions

Design learning experiences that support learner progression from passive AI consumers to autonomous innovators

Incorporate ethical

	AI-Prompt Scale/Rubric Elements	Airlight AI-Q Utilization Levels	ISTE Standards for Educators	Bloom's Taxonomy Level
Level 1: Basic Recall and Comprehension	Language Clarity, Accessibility and Inclusivity	Stage 1: Passive Consumer	5a. Designer, 5b. Designer	Remember, Understand
Level 2: Application and Analysis	Curriculum Alignment, Applied Application of Learning	Stage 2: Active Inquirer	6a. Facilitator, 6b. Facilitator	Apply, Analyze
Level 3: Evaluation and Synthesis	Cognitive Engagement, Critical Thinking	Stage 3: Critical Evaluator	3b. Citizen, 3c. Citizen	Evaluate
Level 4: Interdisciplinary Integration	Learning Enhancement, Personalization	Stage 4: Collaborative Creator	4a. Collaborator, 7a. Analyst	Create

A.I. Prompt Rubric for Education

The AI-PromptScale Rubric serves the purpose of evaluating and improving the quality of prompts used in AI-based activities for students. It provides a structured framework to assess prompt clarity, curriculum alignment, cognitive engagement, critical thinking, and personalization. The rubric aims to enhance the educational experience by ensuring that prompts are clear, aligned with curriculum goals, foster cognitive engagement and critical thinking, and consider individual student needs and preferences. By utilizing the AI-PromptScale rubric, educators can create more effective and inclusive learning experiences in the context of AI education. *

Developed by Dr. Robbie Melton

Interim Provost & Vice President of Smart Solutions, 2023

Language Clarity

The prompt utilizes clear and concise language that effectively conveys the intended message to both the AI system and students.

1 5

Curriculum Alignment

The prompt demonstrates strong alignment with the curriculum goals and learning objectives, enhancing its educational value significantly.

1 5

Cognitive Engagement

The prompt effectively stimulates cognitive engagement and encourages critical thinking in students, fostering active participation and deep understanding.

1 5

Personalization

The prompt demonstrates a high level of consideration for individual student needs and preferences, providing a personalized learning experience that enhances engagement and relevance.

1 5

Learning Enhancement

The extent to which the prompt enhances the learning experience.

1 5

Applied Application of Learning

The opportunities provided by the prompt for students to apply their learning in practical or real-world contexts.

1 5

Accessibility and Inclusivity

The prompt considers accessibility and inclusivity aspects, ensuring equal participation for all students effectively.

1 5

Ethical Considerations

The prompt adheres to ethical guidelines, respects privacy norms, and promotes student well-being.

1 5

1. Accelerating Data Analysis and Insights

Big Data Processing: AI algorithms analyze vast datasets efficiently, identifying patterns and correlations in minutes compared to manual methods.
Predictive Analytics: AI enables predictive modeling in fields like climate science, disease outbreaks, and economic forecasting.
Real-Time Analysis: AI-powered systems can process and analyze data in real-time, improving responsiveness in research applications such as disaster management and clinical trials.
"

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Enrich

More Tools

2. Advancing Simulations and Modeling

Complex Simulations: AI enhances the accuracy and speed of simulations, such as protein folding in biology or crash testing in engineering.
Generative Models: AI-driven generative models create new designs, such as drug molecules in pharmaceuticals or materials in manufacturing.
High-Performance Computing (HPC): AI optimizes HPC workflows, allowing researchers to run more complex computations on supercomputers.

Gemini

2.5 Flash

Invite a friend

PRO

Hello, Dr. Robbie

Ask Gemini

Deep Research

Canvas

Video

New 🚀 See the 5 big updates to Julius Teams!

What analysis do you want to run?

Chat with your files and get expert-level insights in seconds

Ask Julius to analyze your data...

3. Transforming Collaboration and Accessibility

- **Automated Research Assistance:** AI-powered virtual assistants streamline literature reviews, summarize research papers, and propose experimental designs.
- **Democratizing Research:** Open-source AI tools and platforms lower barriers for underfunded institutions, enabling broader participation in cutting-edge research.
- **Global Collaboration:** AI tools facilitate multilingual communication, data sharing, and real-time collaboration among researchers worldwide.

Perplexity AI

Company ⋮

Perplexity AI, or simply Perplexity, is an American web search engine that uses a large language model to process queries and synthesize responses based on web search results.

4. Driving Innovation Across Disciplines

- **Healthcare:** AI accelerates drug discovery, diagnostics, and personalized medicine.
- **Environmental Science:** AI models predict and mitigate climate change impacts, optimize renewable energy systems, and improve conservation efforts.
- **Social Sciences:** AI analyzes societal trends, human behavior, and policy impacts, contributing to more informed decision-making.

ResearchRabbit

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literature search, alerts, and more

Elicit Recent Library Upgrade Help R robbie.melton@gmail.com

The Influence of Internet2 on Higher Education

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the impact of internet2 in higher Education

Summary of top 4 papers

Copy

Internet2 has emerged as a transformative force in higher education, offering advanced networking capabilities and fostering innovation. It aims to develop next-generation Internet technologies for research and education, focusing on multimedia applications and enhanced network services (Armoni, 2001). The project involves collaboration between universities, federal agencies, and

5. Promoting Ethical and Responsible Research

- **Bias Detection and Mitigation:** AI helps identify and reduce bias in datasets and algorithms, fostering more equitable outcomes.
- **Privacy and Security:** AI safeguards sensitive research data through enhanced encryption and secure access controls.
- **Ethical AI Development:** Researchers are creating frameworks to ensure AI applications are fair, transparent, and aligned with societal values.

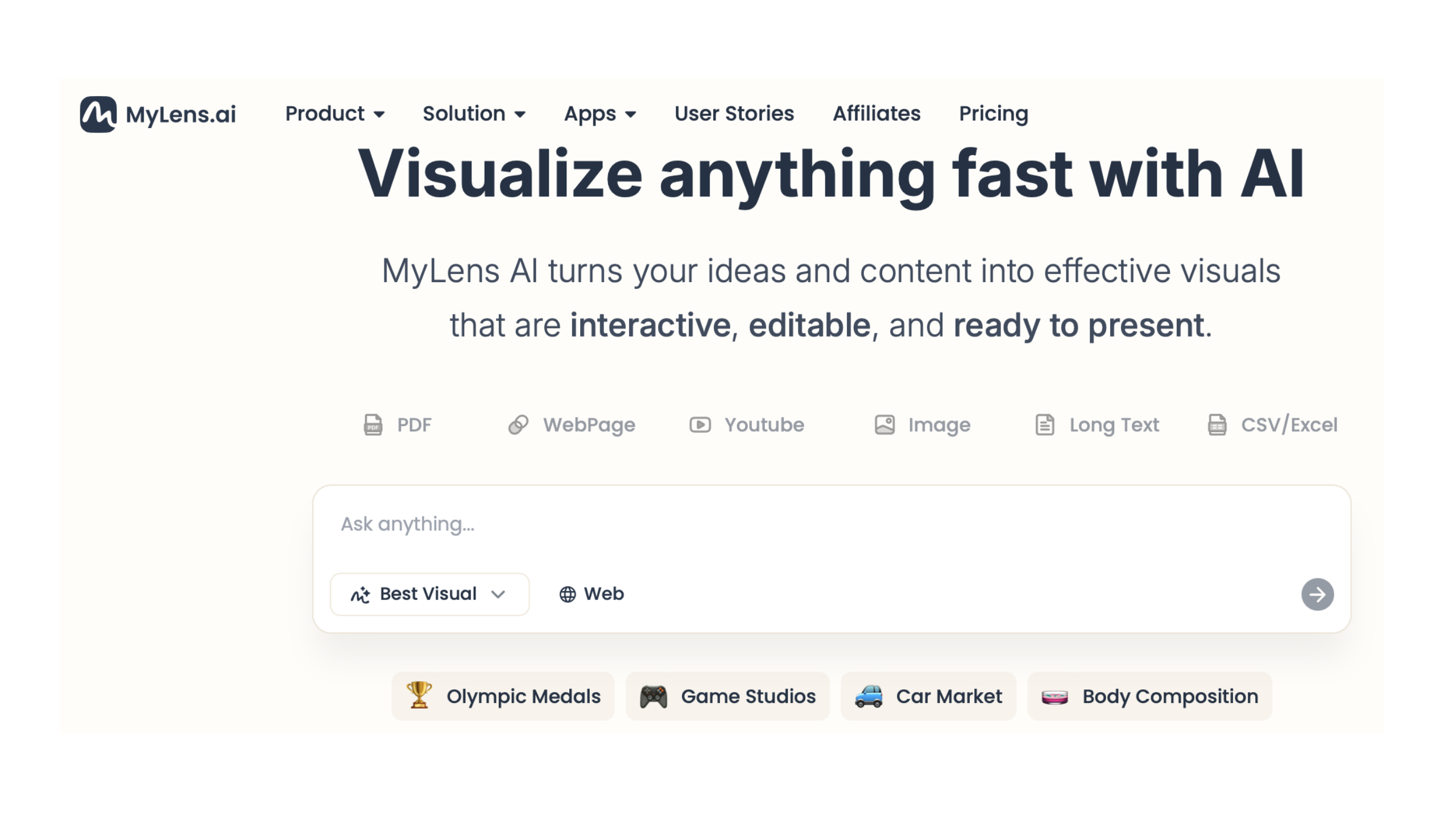
AI-Powered Research Assistant

- Structured Text
- 10M+ full-text PDFs
- Autocitation in your style
- Write smarter with AI tools
- Text personalizer

Draft | Literature review

AI drafts, you refine for submission

The Impact of COVID-19 Lockdown on Parents' Mental Health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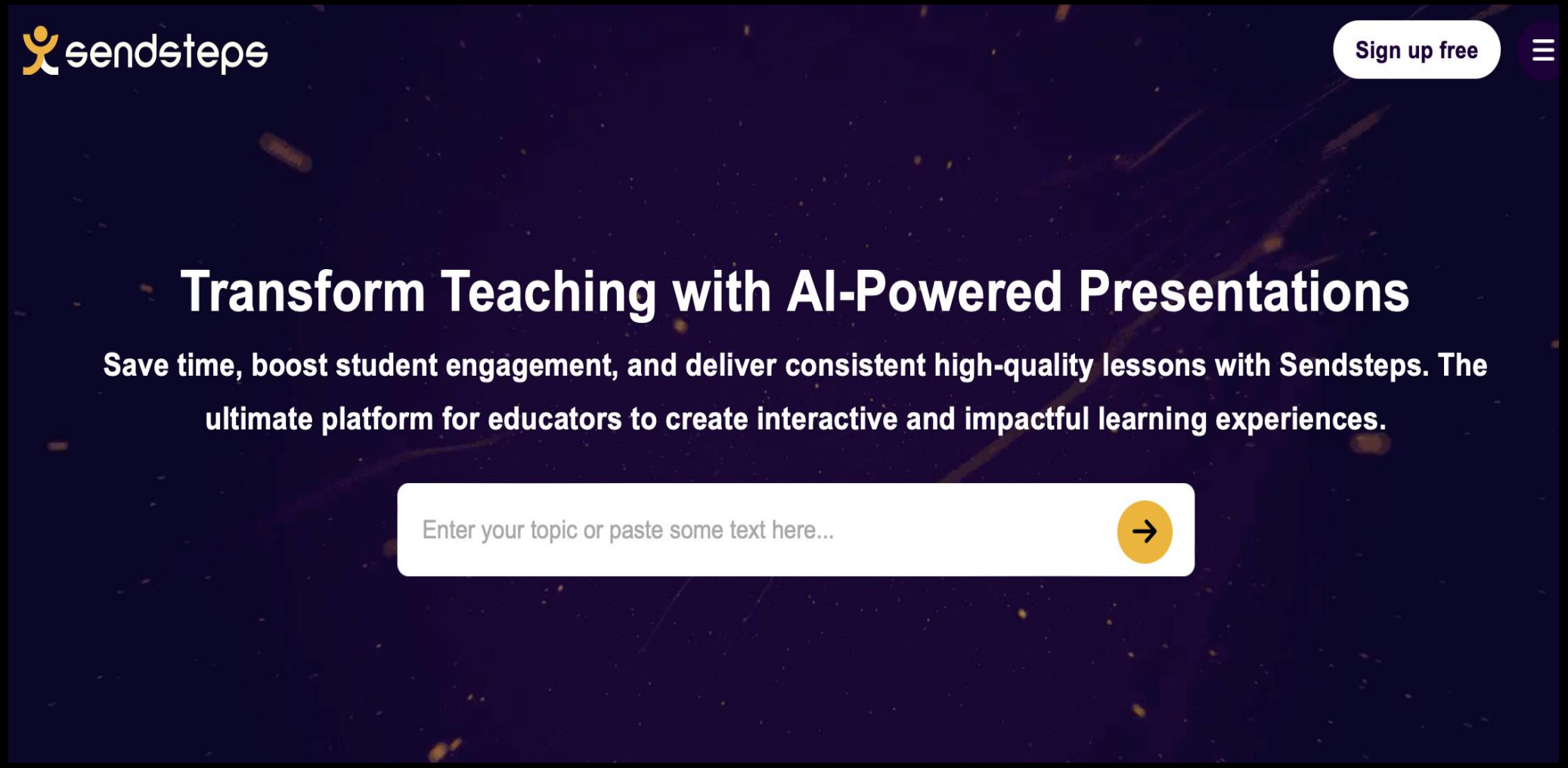
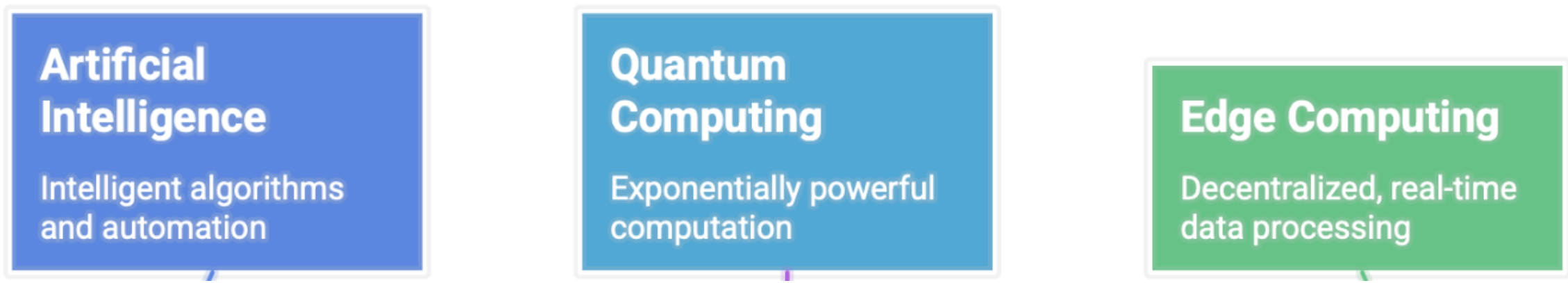
6. Training and Presentations



7. Shaping the Future of Research Computing

- **Edge Computing:** AI enables decentralized data processing, reducing latency and improving efficiency in research workflows.
- **Quantum Computing:** AI is being integrated with quantum systems to address problems beyond the reach of classical computing.
- **AI-Driven Automation:** Automating repetitive tasks in research workflows allows scientists to focus on creative and strategic exploration.

Synergy of AI and Advanced Computing Paradigms



WHAT - WHEN – WHERE and HOW to USE TECHNOLOGY

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Questions?