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UNLOCKING KNOWLEDGE

Leveraging AI to Access Open Educational Resources in Education

DR. HESHAM MOHAMED ELSHERIF

DR. SALWA ELMEAWAD

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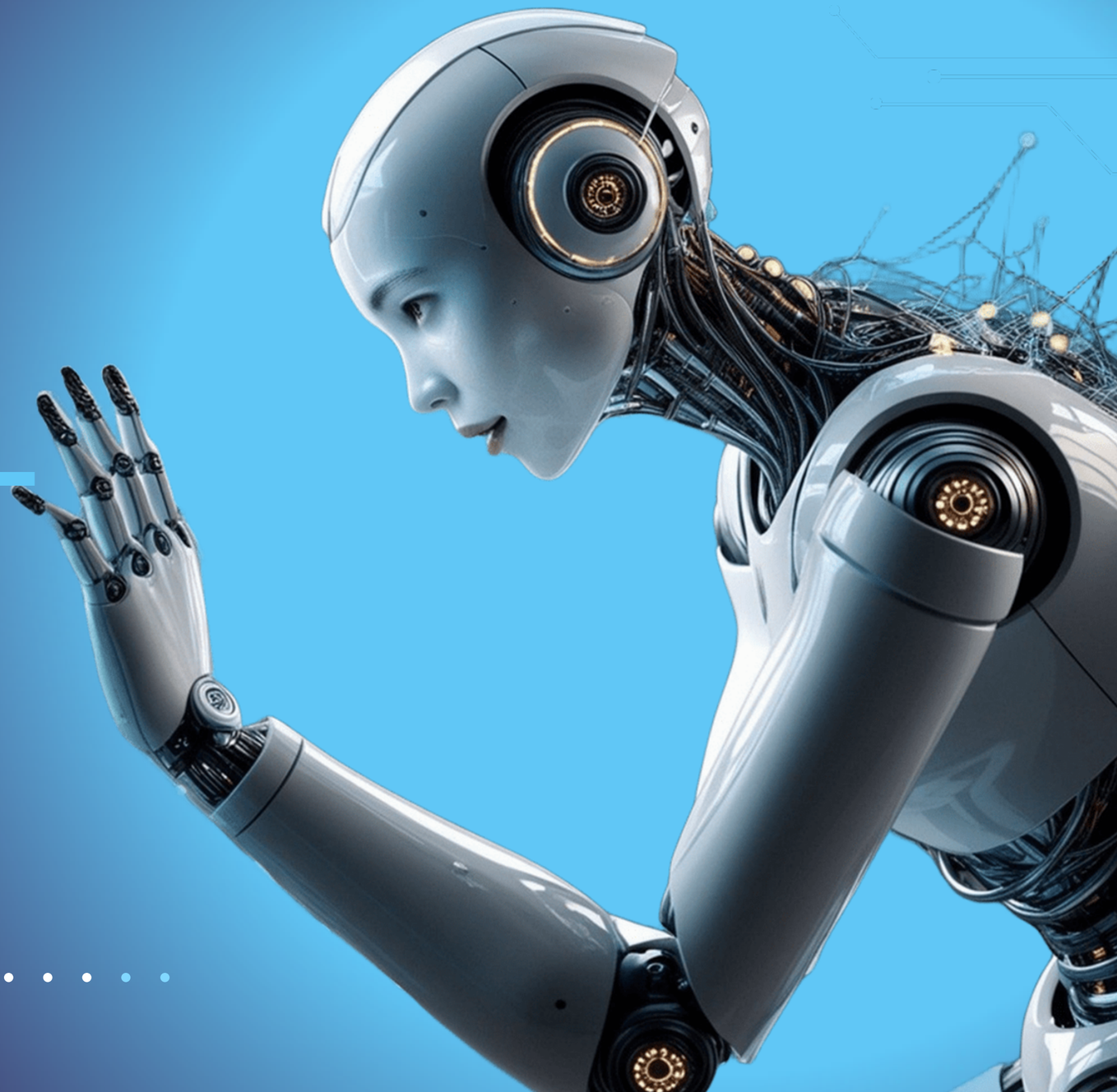
OPEN EDUCATIONAL RESOURCES (OER)



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OPEN EDUCATIONAL RESOURCES DEFINITION

Open Educational Resources (OER) are teaching, learning, and research materials that are freely available for anyone to use, adapt, and share. They either reside in the public domain or are released under an open license that permits no-cost access and redistribution with few or no restrictions. OER can include textbooks, course readings, multimedia, software, and other educational tools. The goal of OER is to enhance educational access and promote collaborative learning by reducing barriers to high-quality educational content..

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OPEN EDUCATIONAL

OPEN EDUCATIONAL Courses

- MIT OpenCourseWare (OCW)
- Open Learning Initiative (OLI) - Carnegie Mellon University
- OpenStax
- Khan Academy
- The Open University (OpenLearn)
- Coursera (Free Courses)
- edX (Audit Mode)
- MERLOT (Multimedia Educational Resource for Learning and Online Teaching)
- FutureLearn (Free Courses)

OPEN EDUCATIONAL Text-Books

- OpenStax
- LibreTexts
- MERLOT
- BCcampus OpenEd
- OER Commons
- Wikibooks
- The National Academies Press
- Project Gutenberg
- GALILEO Open Learning Materials
- The Directory of Open Access Books (DOAB)
- MIT Press Open

OPEN EDUCATIONAL Scientific Research

- Directory of Open Access Journals (DOAJ)
- PubMed Central (PMC)
- arXiv
- ERIC
- SSRN (Social Science Research Network)
- Public Library of Science
- ScienceOpen
- JSTOR Open Content
- BioMed Central (BMC)
- ResearchGate

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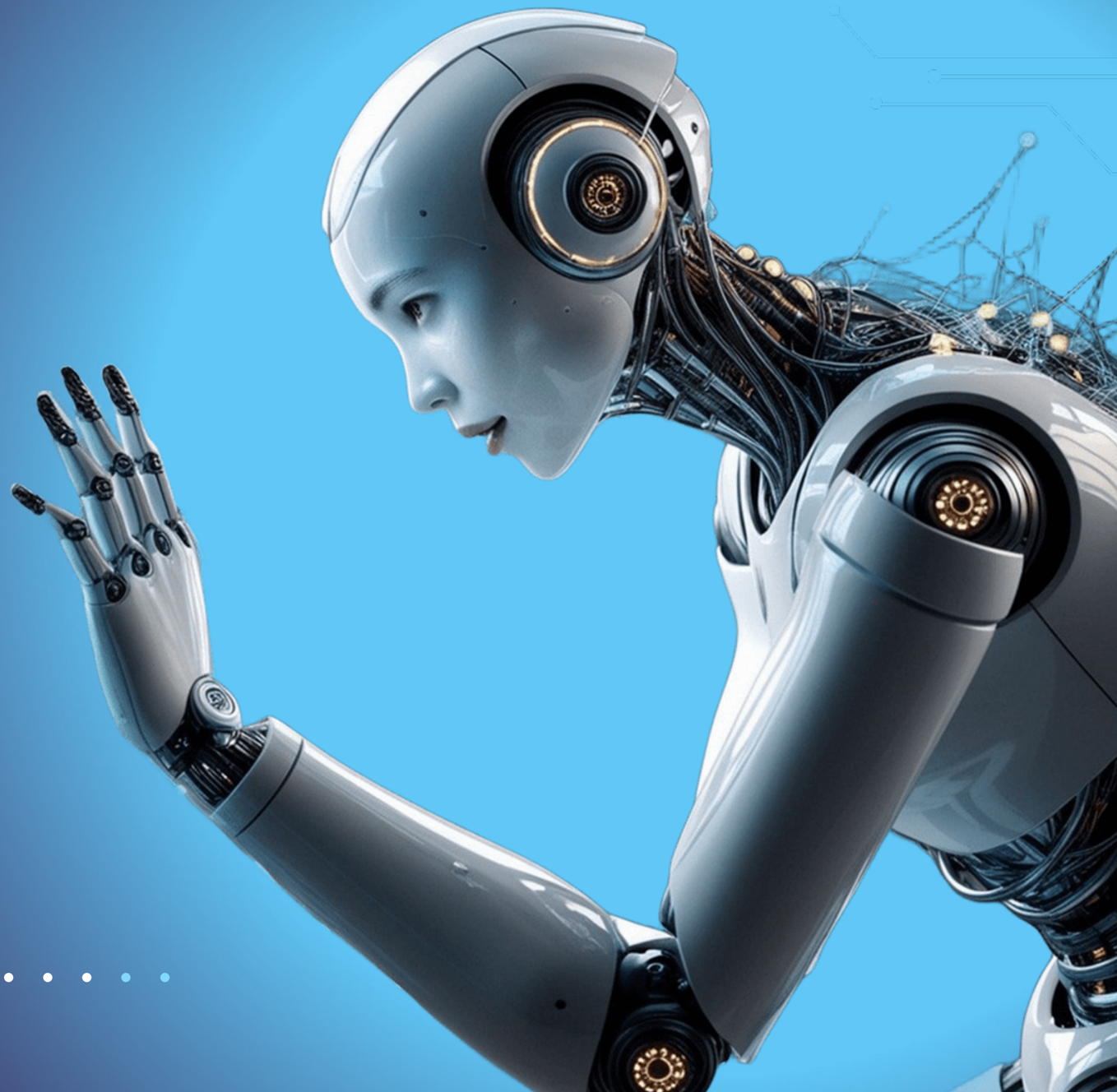
AI TOOLS (NLP - ML)



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NATURAL LANGUAGE PROCESSING (NLP)

NLP is a field of AI focused on enabling computers to understand, interpret, and respond to human language in a meaningful way. NLP powers applications like chatbots, translation services, and search engines, and it combines elements of linguistics, computer science, and statistics.

The core tasks in NLP include:

- **Tokenization**: Breaking down a sentence into individual words or pieces.
- **Part-of-Speech Tagging**: Identifying the grammatical parts of each word (like nouns, verbs).
- **Named Entity Recognition (NER)**: Detecting entities like names, dates, locations in text.
- **Sentiment Analysis**: Determining the sentiment or mood (positive, negative, neutral) in text.

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MACHINE LEARNING (ML)

Machine learning is a broader field of AI that involves building algorithms that allow computers to learn from data and make predictions or decisions without being explicitly programmed for each task. Machine learning models work by identifying patterns within data and using those patterns to make predictions on new, unseen data.

There are several key types of machine learning:

- **Supervised Learning:** The model is trained on a labeled dataset, where each example has an input and an output label
- **Unsupervised Learning:** The model is trained on data without labeled outputs, aiming to find hidden structures within the data
- **Reinforcement Learning:** The model learns by interacting with an environment and receiving feedback
- **Deep Learning:** A subset of machine learning that uses neural networks with many layers to process data and perform tasks like image

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AI BENEFITS

AI tools collectively enhance the adaptability, efficiency, and responsiveness of OER platforms

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CURRENT AI-ENHANCED OER PLATFORMS

PERSONALIZED LEARNING SYSTEMS

AI algorithms can analyze individual learning patterns and preferences to tailor content to the specific needs of students.

AI-POWERED RECOMMENDATION ENGINES

Using machine learning to recommend OER content such as videos, articles, or courses

INTELLIGENT CONTENT CURATION

AI tools automate the organization and updating of OER repositories by curating high-quality, relevant resources.

NLP FOR SEARCH OPTIMIZATION

NLP tools enhance the searchability of OER by understanding complex queries, improving search accuracy.

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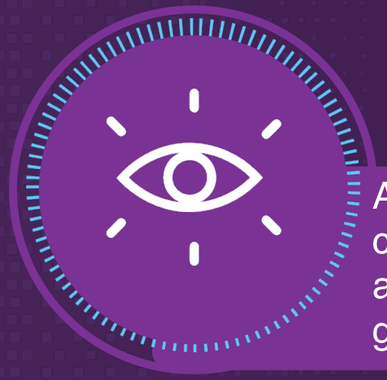
CURRENT AI-ENHANCED OER PLATFORMS

AUTOMATED ASSESSMENT AND FEEDBACK

AI tools are being used to provide real-time feedback on student work, offering, grading, and even adaptive challenges.

ADAPTIVE LEARNING PATHWAYS

AI platforms analyze student performance and suggest customized learning paths.



VIRTUAL TEACHING ASSISTANTS

AI-powered virtual assistants and chatbots provide immediate help, answer questions, and offer guidance.

AUTOMATED CONTENT GENERATION

AI assist in creating OER content, such as quizzes, summaries, and flashcards to make it easier for educators to provide interactive materials.

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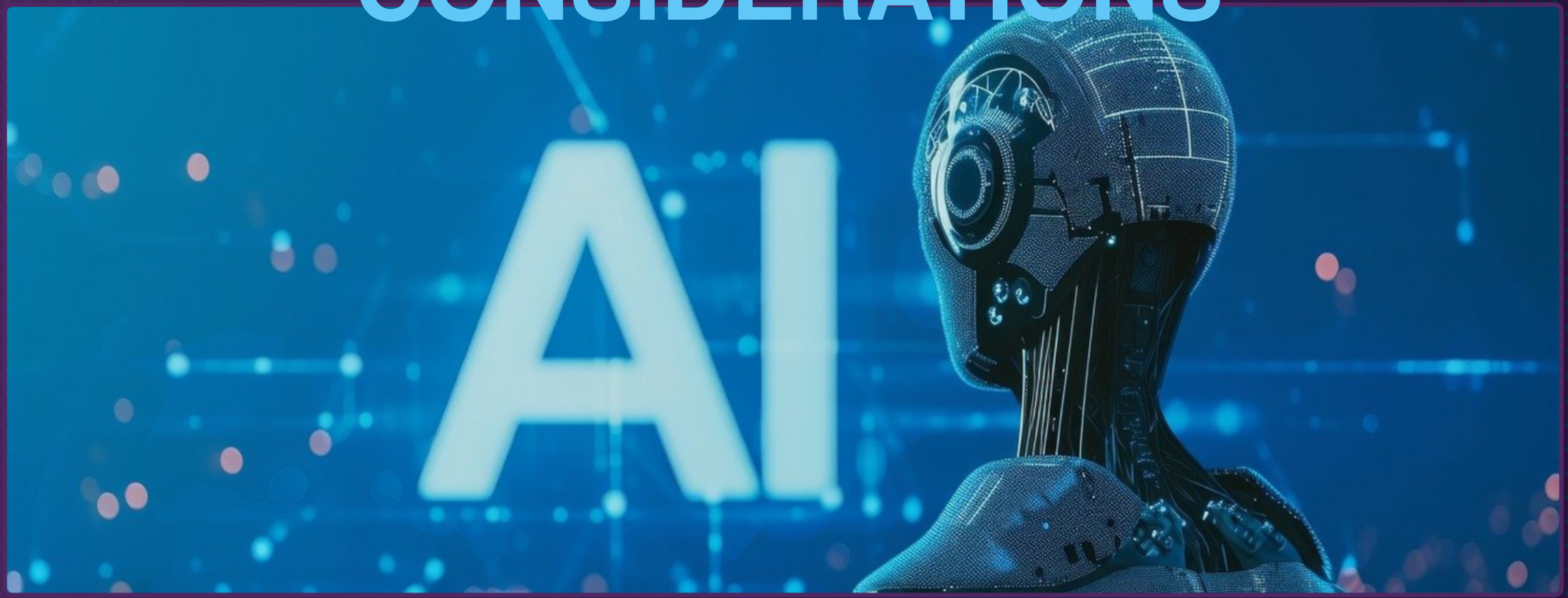
AI ETHICAL CONSIDERATIONS

Addressing AI Ethical Considerations Requires Proactive Collaboration Among Educators, AI Developers, Policymakers, And Communities To Create Responsible, Inclusive, And Impactful AI Systems In Education.



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ETHICAL CONSIDERATIONS OF USING AI IN EDUCATIONAL SYSTEMS AND OER

DATA PRIVACY AND SECURITY

AI in education relies heavily on personal data from students, including their learning habits, assessments, and personal details.

BIAS AND FAIRNESS

AI algorithms can inherit biases from their training data, leading to unequal treatment or opportunities for certain groups of students.

TRANSPARENCY AND ACCOUNTABILITY

AI-driven decisions may lack transparency, making it difficult for students and educators to understand why certain educational recommendations or evaluations are made.

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ETHICAL CONSIDERATIONS OF USING AI IN EDUCATIONAL SYSTEMS AND OER

AUTONOMY AND HUMAN OVERSIGHT

Heavy reliance on AI could diminish the role of educators, potentially undermining human judgment and autonomy in education.

ACCESS AND EQUITY

Not all students have equal access to AI-enhanced education due to disparities in technology access, which can widen the digital divide.

INTELLECTUAL PROPERTY AND LICENSING

AI-generated OER content might blur lines in ownership and copyright, creating conflicts regarding intellectual property rights.

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ETHICAL CONSIDERATIONS OF USING AI IN EDUCATIONAL SYSTEMS AND OER

STUDENT MOTIVATION AND WELL-BEING

Over-reliance on AI could lead to excessive screen time, reduced interpersonal skills, or diminished intrinsic motivation for learning.

ACCURACY OF AI-GENERATED CONTENT

AI-generated content for OER might lack accuracy or educational quality, potentially spreading misinformation.

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Resources for AI in Research and Education

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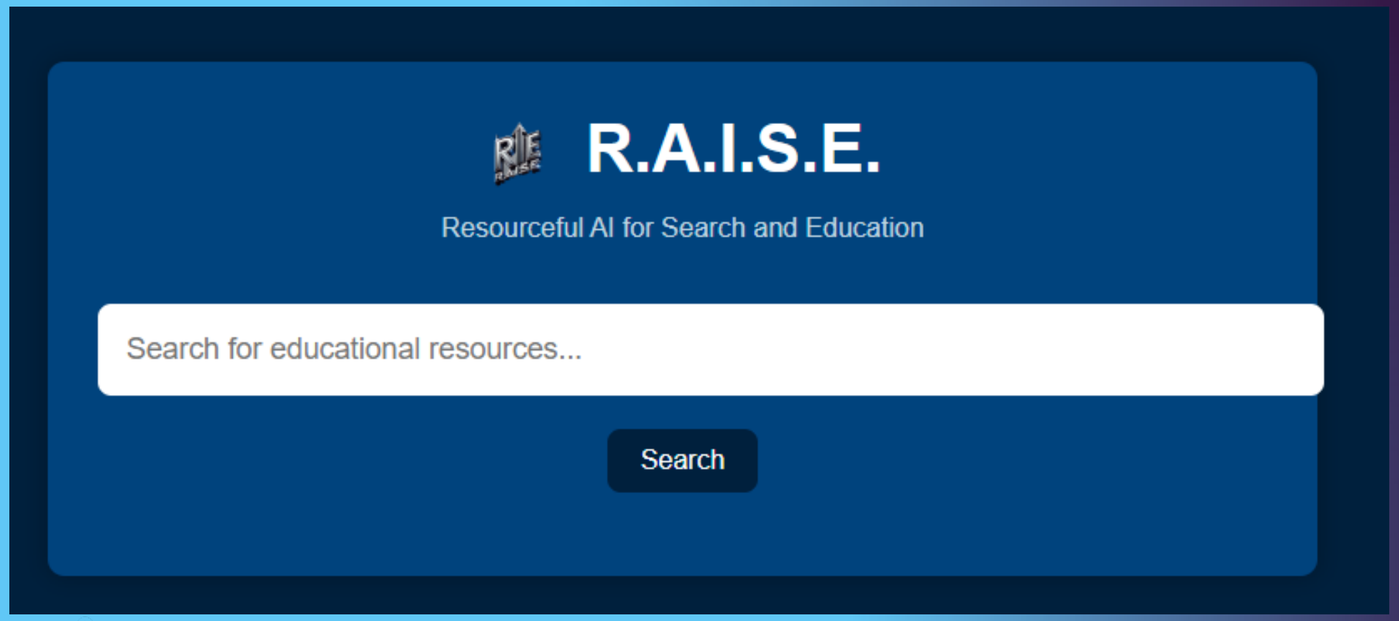

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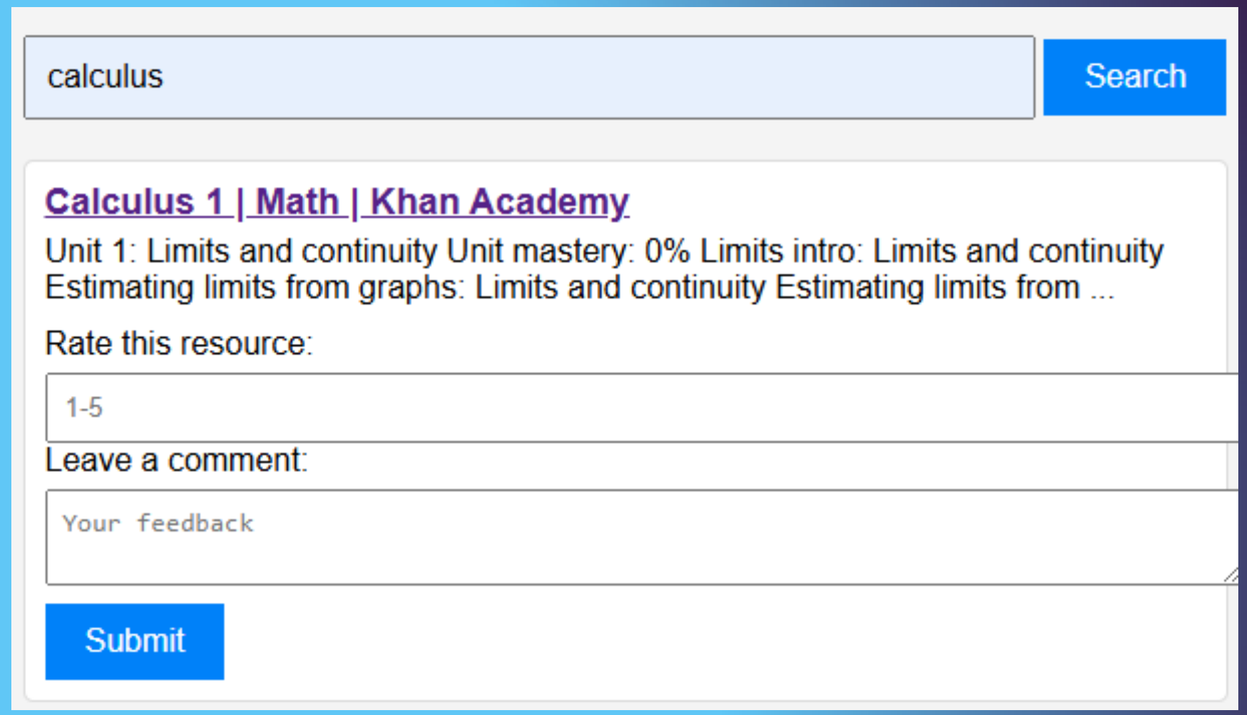
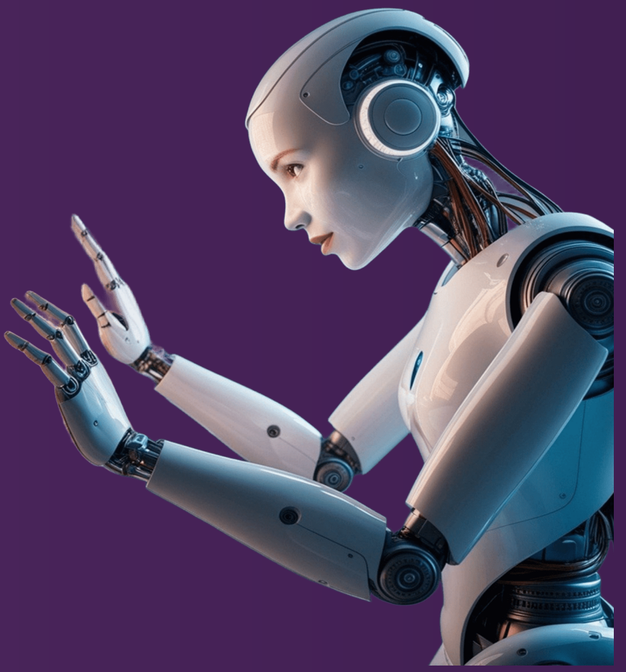


ENHANCING R.A.I.S.E.



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QUESTIONS & DISCUSSION