

AI Tools for Medical Educators

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For IAMSE



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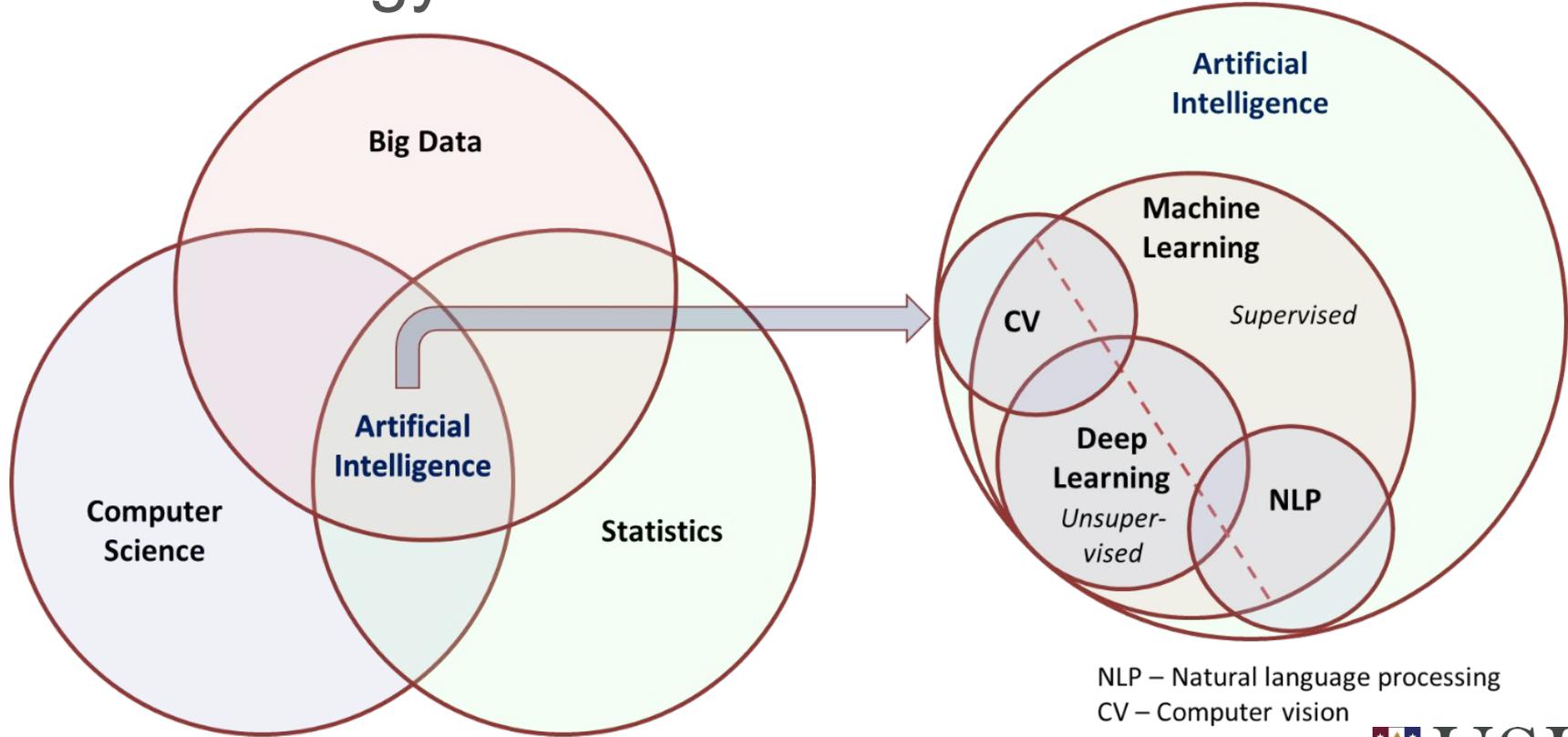
The authors have no financial disclosures.

Goals

Participants will be able to accurately:

- State AI terminology
- Identify AI teaching opportunities
- State citation options for AI tool use
- Explain course policies AI-generative tool(s)
- Explain 2 accountability measures for AI systems
- State assessment impacts now and in the future

Terminology Review



NLP – Natural language processing

CV – Computer vision

NLP in medical education assessment

Processing trainee evaluations

Assessing supervisor evaluation techniques

Assessing gender bias

> Acad Med. 2023 Apr 1;98(4):497-504. doi: 10.1097/ACM.0000000000005115. Epub 2022 Dec 5.

ANESTHESIA & ANALGESIA

Articles & Issues ▾ A&A Practice CME Collections Subjects 中文翻译 Multimedia ▾ For Authors

Competency-Based Assessments: Leveraging Artificial Intelligence to Predict Subcompetency Content

Gregory J Booth¹, Benjamin Ross¹, William A Cronin¹, Angela McElrath¹, Kyle L Cyr¹, John A Hodgson¹, Charles Sibley¹, J Martin Ismawan¹, Alyssa Zuehl¹, James G Slotto¹, Maureen Higgs¹, Matthew Haldeman¹, Phillip Geiger¹, Dink Jardine¹

Outline
Images

ORIGINAL RESEARCH ARTICLES: ORIGINAL CLINICAL RESEARCH REPORT

Using Machine Learning to Evaluate Attending Feedback on Resident Performance

Neves, Sara E. MD¹; Chen, Michael J. BS²; Ku, Cindy M. MD³; Karan, Suzanne MD⁴; DiLorenzo, Amy N. PhD⁵; Schell, Randall M. MD, MACM⁶; Lee, Daniel E. MD, PhD⁷; Diachun, Carol Ann B. MD, MEd⁸; Jones, Stephanie B. MD⁹; Mitchell, John D. MD⁷

> Med Educ. 2021 Dec;55(12):1383-1387. doi: 10.1111/medu.14593. Epub 2021 Jul 30.

Gender bias in resident evaluations: Natural language processing and competency evaluation

Jane Andrews¹, David Chartash², Seonaid Hay³

AI as a Competency: Healthcare, Education, and Research



Statistical analysis by hand
→ statistical software



Card catalogs searches
→ database searching



Following clinical algorithms
□ clinical decision support
in electronic health record



Text generation “by hand”
→ critical thinking &
dialogue

ChatGPT Demo



CURRICULUM
DEVELOPMENT



ASSESSMENT
CREATION



TEACHING
METHODOLOGY



RESEARCH IDEAS



ADAPTIVE
TEACHING

AI as a member of the team



“Please create an image of an AI medical educator working in a clinic alongside a team of healthcare professionals.”

Image Creator, powered by DALL-E

Considerations for AI in Education

- Information entered into public AI (LLMs) is shared with the author / owner of the model
- NEVER enter information which isn't already cleared for public release
 - Personal Data/Information
 - Controlled unclassified information (CUI)
 - Hiring, performance management, or contract data
 - Student data, evaluations, PII
- Private models with retained information rights are coming and can be contracted
- Training models with domain specific knowledge can be its own (copy)rights issue

Policy

- Federal
- State
- University
- College
- Department
- Classroom
- Use agreements

Example no-use:

All assignments should be your own original work, created for this class...You should not use software (“spinbots”) or AI writing software (like ChatGPT).

Example use:

I expect you to use AI (ChatGPT and image generation tools, at a minimum), in this class. In fact, some assignments will require it. Learning to use AI is an emerging skill, and ...

Retrieved on 4/2023 modified from

<https://docs.google.com/document/d/1RMVwzjc1o0Mi8Blw-JUTcXv02b2WRH86vw7mi16W3U/edit>

4 Generative AI Use Cases - Educause 2023

Dreaming

Helping you think



- Brainstorming/ideation/getting unstuck
- Summarization and synthesis of complex content
- Research and analysis
- Asking questions/learning

Drudgery

Lightening your load



- Sending communications/emails
- Drafting administrative documents, materials, reports
- Reviewing and proofreading materials
- Grant, proposal, and contract writing

Design

Building your content



- Creating presentations, slides, and other content
- Creating course materials, exams, and syllabi
- Editing and creating images and videos
- Suggesting prompts and materials for trainings and workshops

Development

Advancing your work



- Drafting department and institution policies
- Developing department and institution strategic plans
- Creating detailed project plans
- Offering advanced scripting and coding (e.g., complex SQL queries, Excel formulas)

McCormack, M, (2023.EDUCAUSE)
QuickPoll Results: Adopting and
Adapting to Generative AI in Higher
Ed Tech. from [Educause Research
Notes](#)

AI Tools for the Medical Educator

Generators:

- Text
- Image
- Video
- Audio
- 3D
- Coding
- Surgical robots / robot-assisted surgery
- Robotics for radiotherapy
- Rehabilitation robots
- Laboratory robots
- Robotic prosthetics
- Simulated ChatBot Patients
- Medical records
- AI diagnostic Systems
- Calculations
- Diagnosis

Teaching Opportunities

- Altered active real learning
- Independent thinking & creativity
- Review of data & articles quickly
- Overcoming writer's block
- Research / Analysis skills
- Real time response to questions
- Tutoring / Practice
- Creation of Case Studies

Curricular Integration Opportunities

- AI formalized curriculum
- Introduction to AI Concepts
- Computer literacy/fluency
- Data science
- Hands on AI tools practice
- Medical Decision Making with AI
- Professional Identity formation
- Ethical decision making
- Computer Science Theory

ChatGPT Response to “AI in medical education curriculum”

Integrating AI into medical education curriculum has become increasingly important due to the rapid advancements in technology and its potential to improve patient care. Here are some ways AI can be incorporated into medical education curriculum:

1. **Introduction to AI:** Medical students should have a basic understanding of what AI is and how it works. This can be included in the first-year curriculum as a foundation for understanding how AI can be used in medicine.
2. **Data Science:** Medical students should be introduced to the principles of data science, including data collection, data cleaning, data analysis, and data visualization. This will enable them to understand the importance of data in healthcare and how AI can help with data analysis.
3. **Imaging and Diagnosis:** AI can help in medical imaging and diagnosis. Medical students should be introduced to the use of AI in radiology and pathology, which can improve accuracy and reduce diagnostic errors.
4. **Medical Decision-Making:** AI can assist with medical decision-making by providing evidence-based recommendations. Medical students should be taught how AI can be used to analyze patient data and provide treatment recommendations.
5. **Ethical Considerations:** The integration of AI in medical education should also include discussions on ethical considerations such as privacy, bias, and transparency.
6. **Practical Applications:** Medical students should be given opportunities to apply their knowledge of AI in real-world scenarios. This can be achieved through projects, internships, or clinical rotations.

Assessment and AI

Project based learning

Expectations of drafts

Rubrics

Annotated references

Reflections

Pen & Paper in class

Testing centers

Assessments Practices

- Make students work collaborative
- Scaffold assignments
- Get familiar with students writing style
- Make assignments personal, timely and specific
- Create assignments that require higher level cognitive skills
- Authentic assessments
 - Observational
 - Visual (watched) assessments (simulation, etc.)

Plagiarism

- 2023 paper found that the GPTZero correctly classifies 99% of human-written articles and 85% of AI-generated content
- ChatGPT verification generated by itself, as an additional measure of plagiarism check, showed superior performance compared to the traditional plagiarism-detection tools

Plagiarism

- 2022 study on plagiarism detection software identified 40 out of 50 essays generated by ChatGPT high level of originality
- Highest originality were those that dealt with more contentious topics that required interpretation.
- Academic abstracts completed by ChatGPT could pass without getting caught

Citation

Publishers - Citation - Transparency (Else, 2023)

AMA and APA style guides and AI generated text in academic papers

Non-human

Methods (AMA & APA), acknowledgements (AMA), introductions (APA)

Citing AI in text

AMA has no specific guidance

APA recommends providing the prompt used and then generated text

Cited as personal communication and non-retrievable (example on following slide)

Example citations

APA citation

When prompted with “Is the left brain right brain divide real or a metaphor?” the ChatGPT-generated text indicated that although the two brain hemispheres are somewhat specialized, “the notation that people can be characterized as ‘left-brained’ or ‘right-brained’ is considered to be an oversimplification and a popular myth” (OpenAI, 2023).

Reference

OpenAI. (2023). *ChatGPT* (Mar 14 version) [Large language model]. <https://chat.openai.com/chat>

AMA citations

Describe your use of AI in methods or acknowledgements.

AI Detectors

Examples

- Content at Scale
 - Watson Ai
 - Originality.AI
 - Sapling
 - ZeroGPT
 - GPTZero
 - AI Text Classifier
- False positives (human-written texts flagged as AI)
 - GPT-4 texts were generally harder to detect than GPT-3.5 texts.
 - AI texts that have been combined with human text or paraphrased are hard to detect.
 - AI detectors generally don't detect the use of paraphrasing tools on human-written text.

Final Thoughts

Human Touch

Data-ML-AI Literacy NOW Fluency

Questions

References

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