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# Artificial Intelligence and Medical School Admissions and Selection

July 30, 2024



Association of  
American Medical Colleges

# Welcome!



**Leila E. Harrison, PhD, MA, MEd**

*AAMC GSA Chair of the Committee on Admissions*

- *Vice Dean for Admissions, Student Affairs, and Alumni Engagement*
- *Scholarly Associate Professor*

*Washington State University Elson S. Floyd College of Medicine*

# AAMC AI Webinar Series



## Past

- AI in Medical Education: Using the Missions of Medical Education as a Guide – *January 23, 2024*
- Building Trust and Transparency in the Age of AI: Behind the Data Curtain – *February 28, 2024*
- AI & Healthcare Delivery: Navigating the Clinical Reality and Expectations – *March 26, 2024*
- Utilizing AI for the Medical Education Classroom – *April 30, 2024*
- AI in Medical Education: Faculty as Learners and Educators – *May 22, 2024*
- A Disruptive Connector: Learning and Experimenting with Generative AI Together – *June 11, 2024*
- Leveraging AI to Support Operational Functions – *June 25, 2024*

## Future

- Leveraging AI for Research – *August 27, 2024*
- The Use of AI Tools in the Scholarly Publishing Process: Considerations and Practical Suggestions for Scholars – *September 10, 2024*

# Current Landscape of AI Across Admissions and Selection

- Longer term use of AI in admissions for selection
- Tool development rapidly underway


## EMERGING APPROACHES

### Development and Validation of a Data-Driven, AI-Based Decision Support Tool for Applicant Screening and Review

Burk-Rafel, Jesse MD, MRes<sup>1</sup>; Reinstein, Ilan MS<sup>2</sup>; Feng, James MD, MRes<sup>3</sup>; Cocks, Patrick M. MD<sup>6</sup>; Marin, Marina MSc<sup>7</sup>; Aphinyanaphongs, Nicholas MD, MRes<sup>4</sup>

## INNOVATION REPORTS

### A New Tool for Holistic Residency Application Review: Using Natural Language Processing of Applicant Experiences to Predict Interview Invitation

 Mahtani, Arun Umesh MD, MS<sup>1</sup>; Reinstein, Ilan MS<sup>2</sup>; Marin, Marina MSc<sup>3</sup>; Burk-Rafel, Jesse MD, MRes<sup>4</sup>

## RESEARCH REPORTS

### Artificial Intelligence Screening of Residency Applications: Development and Validation of a Machine-Learning Algorithm

Triola, Marc M. MD<sup>1</sup>; Reinstein, Ilan MS<sup>2</sup>; Marin, Marina MSc<sup>3</sup>; Grossman, Robert I. MD<sup>6</sup>; Rivera, Rafael Jr MD, MBA<sup>7</sup>

## JOURNAL ARTICLE

### Using artificial intelligence in medical school admissions screening to decrease inter- and intra-observer variability

Graham Keir , Willie Hu, Christopher G Filippi, Lisa Ellenbogen, Rona Woldenberg

*JAMIA Open*, Volume 6, Issue 1, April 2023, ooad011, <https://doi.org/10.1093/jamiaopen/ooad011>

**Published:** 17 February 2023

**Article history** ▼

# Discussion Across the Community



# What are others asking?



## Colleagues in other areas of medical education

Will we know who our applicants are if they're selected using AI and how would that impact learning?



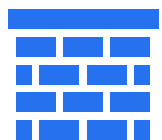
## Deans

What will be the cost associated with incorporating AI in admissions?  
How can AI be incorporated into Strategic Planning and CQI for admissions?



## Staff

Will incorporating AI mean we should expect a reduction in workforce?

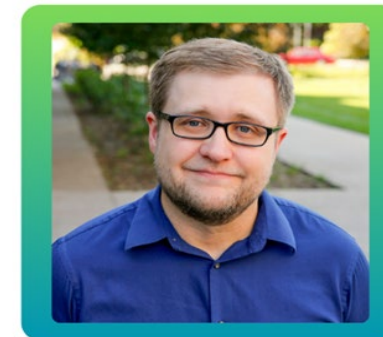


## Applicants/Students

How will medical schools ensure additional structural barriers won't be a result of incorporating AI?

# Our Speakers

**Richard Landers, PhD**, *John P. Campbell Distinguished Professor of Industrial and Organizational Psychology, University of Minnesota - Twin Cities*



**Ioannis Koutroulis, MD, PhD, MBA**, *Associate Dean of MD Admissions; Co-Director, MD Program Clinical and Translational Research Scholarly Concentration; Associate Professor of Pediatrics, Emergency Medicine, Genomics and Precision Medicine; George Washington University School of Medicine and Health Sciences*

**Laurah Turner, PhD, MA**, *Associate Dean of Artificial Intelligence and Educational Informatics, University of Cincinnati College of Medicine*



AAMC's Principles of Responsible AI in Medical School and Residency Selection

permission.

# AI in Admissions and Hiring

Richard N. Landers, Ph.D.

AAMC AI Webinar - July 30, 2024



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# The Hiring/Admissions Problem...

- Assess motivation, capabilities, and competence
- Predict future performance and success
- Determine cultural and values fit
- Construct a diverse and inclusive incoming cohort
- Adhere to ethical and legal standards

**... has not changed!!**



# But the Toolkit is Changing!

- New technology brings new **affordances**
  - Do we benefit from the new affordance?
  - Is the new affordance worth associated costs?
  - “Just because we can doesn’t mean we should.”
- So what does AI afford decision-makers?





# Examples: Assessment and Prediction

- AI affords sensemaking of complex data for recruitment, scoring, and screening
  - Unstructured language (e.g., blanks, vitas, statements, social media)
  - Optimized predictor combination
  - Quantified and managed bias
- AI affords bespoke applicant experiences
  - Virtual agents



# Virtual Agent Demonstrations

- **AAMC Chatbot**  
(demo requires paid ChatGPT subscription)  
<https://chatgpt.com/g/g-h3e80ulkZ-aamc-knowledge-agent>
- **Personal AI clone** using [Synthesia](#)
  - First step toward “digital twins” but a long way off still



# Examples: Assessment and Prediction

- These AI affordances (can) cost:
  - money
  - (cyber)security
  - applicant privacy
  - explainability
  - transparency
  - current and future regulatory risk
  - environmental resources



# Why “(can) cost?”

- There are **thousands** of decisions made by AI developers that can be made to rebalance benefits and costs, yet AI developers often don't understand...
  - what you value and why
  - the regulatory context in which you operate
- Example
  - *explainability vs. predictive accuracy*



# The Ethics of Stakeholder Interactions

- **Developers**
- **First parties**
  - people using AI to make decisions (admissions director)
- **Second parties**
  - people being affected by AI decisions (prospective student)
- **Third parties**
  - people observing from the outside (media, regulators)

Langer, M., & Landers, R. N. (2021). The future of artificial intelligence at work: A review on effects of decision automation and augmentation on workers targeted by algorithms and third-party observers. *Computers in Human Behavior*, 123, 106878. <https://doi.org/10.1016/j.chb.2021.106878>





# My Recommendation: Be Bold!

- These stakeholder groups do not speak the same languages but are united by common goals
  - Learning a little AI language goes a long way
- You *must* choose to be involved in decision-making, or these decisions *will* be made by other stakeholders
  - “Choosing to do nothing is still a choice” and that choice will generally disadvantage the disenfranchised





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# The GW perspective

## School of Medicine & Health Sciences

THE GEORGE WASHINGTON UNIVERSITY

- Ioannis Koutroulis, MD, PhD, MBA  
Associate Dean of MD Admissions  
Co-Director, MD Program Clinical and Translational Research Scholarly Concentration  
Associate Professor of Pediatrics, Emergency Medicine, Genomics and Precision Medicine

## The GW perspective

### Current state:

- ✓ Initial discussions with the School of Engineering for evaluation and planning
- ✓ Working on a plan with school leadership to be able to create an AI-based system
- ✓ Lots of interest from the School of Medicine and the University at large

## The GW perspective

### What were major things we discovered?

- ✓ There is value in using such a system: efficiency, ability to identify applicants that are "a good fit"
- ✓ Importance of data: "garbage in-garbage out"
- ✓ Requires IT, funding and continuous training of model
- ✓ How is access to data controlled is important (people involved might need to sign a confidentiality agreement)
- ✓ Process transparency
- ✓ Choose a vendor that can work with your IT team

# The GW perspective

## Challenges:

- ✓ IT risk management (concerns for data breach)
- ✓ Integration with database
- ✓ Ethical considerations: diversity, errors in code, human vs. AI-based review
- ✓ Resources needed/cost
- ✓ How is the system monitored and how frequently are parameters changed



# Development of AI Solutions for Medical School Admissions

Laurah Turner, PhD

AAMC AI Webinar - July 30, 2024


# The Problem/Context

- The process of selection/admissions in MedEd is
  - Lengthy
  - Laborious,
  - Time-consuming process
- Large number of medical school applications
  - 86% increase over the last 2 decades
- Significant inter- and intra-observer variability amongst applicant screeners
- Potential for bias
  - Human
  - Data types

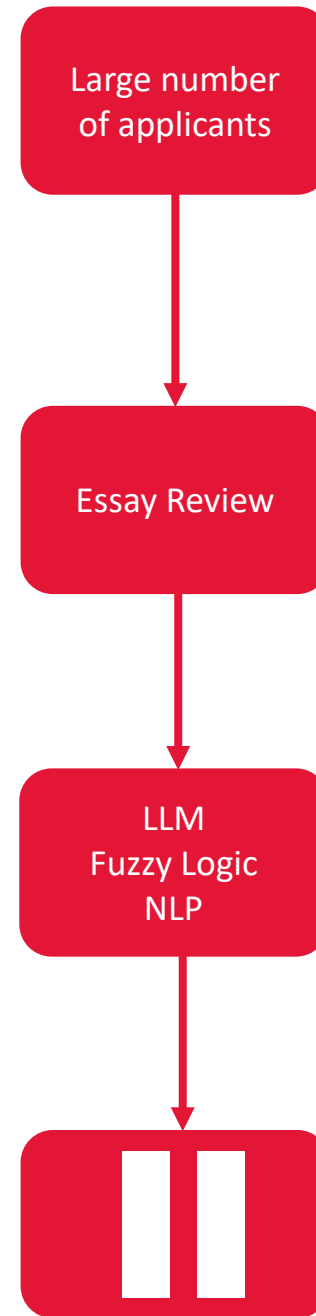
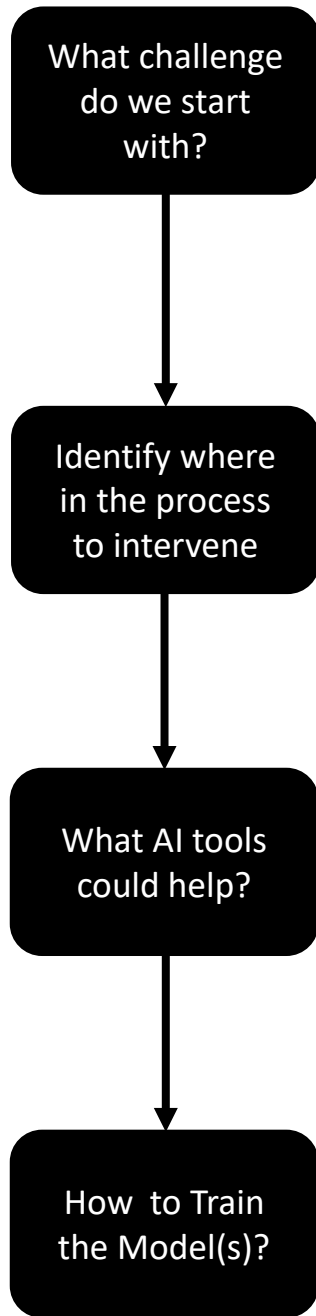
Keir G, Hu W, Filippi CG, Ellenbogen L, Woldenberg R. Using artificial intelligence in medical school admissions screening to decrease inter- and intra-observer variability. JAMIA Open. 2023 Feb 17;6(1):

2021 Fall Applicant, Matriculant, and Enrollment Data Tables. Association of American Medical Colleges; 2021.



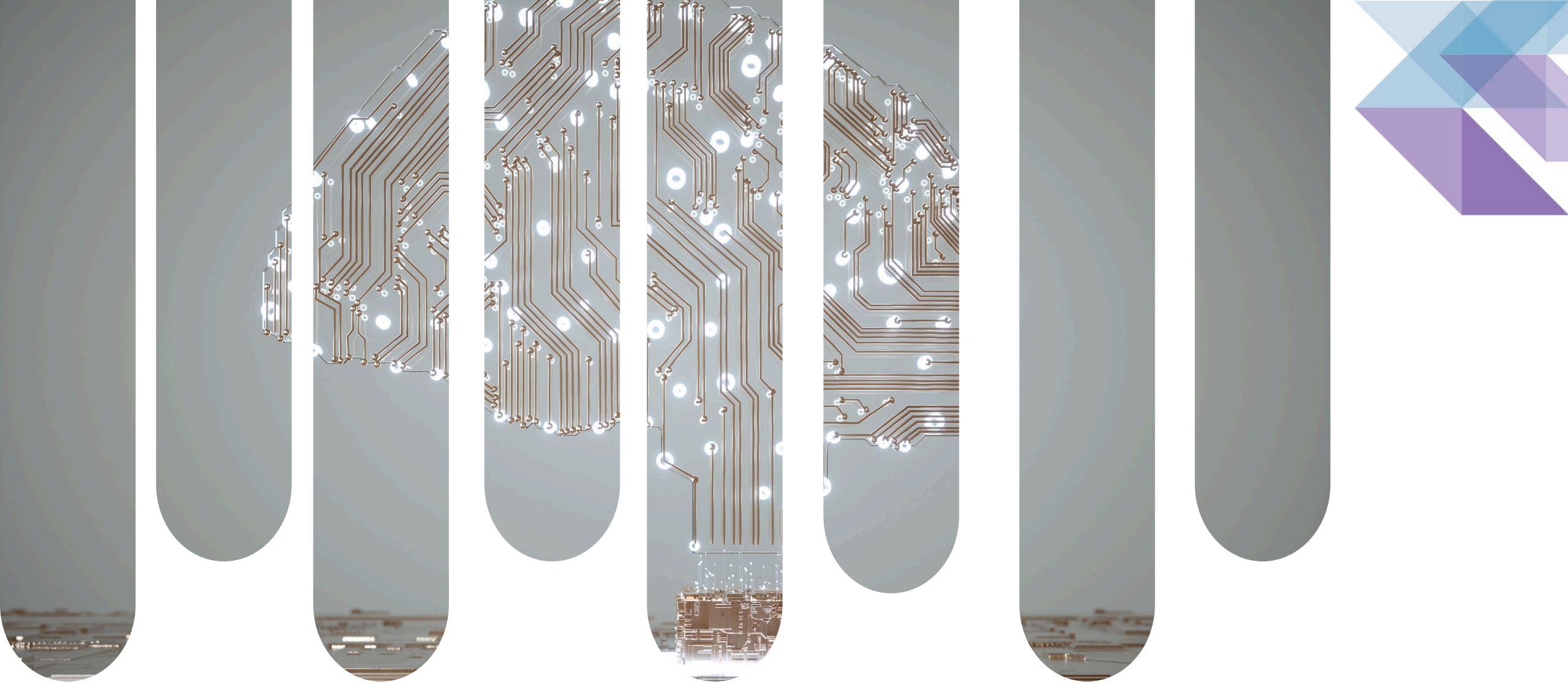


Can we leverage Artificial  
Intelligence to address these  
challenges?



# Considerations

- What is the challenge you are trying to solve?
- Tool selection
- Robustness
- Biases
- Stakeholders
- Evaluation/Human in the loop
  - Scalable oversight



# Artificial Intelligence Technical Advisory Committee



# Technical Advisory Committee:

Graham Keir, MD,  
Neuroradiology Fellow at  
Weill Cornell Medical  
Center, New York  
Presbyterian

Ioannis Koutroulis, MD, PhD,  
MBA, Associate Dean of MD  
admissions at The George  
Washington University  
School of Medicine and  
Health Sciences

Richard Landers, PhD, John  
P Campbell Distinguished  
Professor of Industrial-  
Organizational Psychology  
at the University of  
Minnesota

Arun Mahtani, MD, MS,  
Internal Medicine Resident  
at Richmond University  
Medical Center

Fred Oswald, PhD,  
Professor, Herbert S Autrey  
Chair in Social Sciences,  
Director of Graduate Studies  
at Rice University

Kelly Trindel, PhD, Chief  
Responsible AI Officer at  
Workday

Laurah Turner, PhD,  
Assistant Dean for  
Assessment and Evaluation  
at the University of  
Cincinnati

## **AAMC Staff:**

**Dana Dunleavy, PhD**

Rebecca Frasor, PhD

Derek Mracek, PhD

Jayne Bograd



# Current Use of AI in Admissions and Selection



- Use of predictive modeling to:
  - Identify med school and residency applicants for interview during initial screening.
  - Identify characteristics of students who will be successful in medical school.
  - Identify residency applicants during rank order
- Using natural language processing to:
  - Review personal statements and other qualitative application data to identify applicant characteristics that align with program.
  - Quantify narrative comments and create early detection system to facilitate support for medical students.
- Evaluating AI-Generated Content
  - Assist in writing letters of evaluation, personal statements and/or other essays
  - Test performance

# Current Use of AI in Employment

- Resume screening tools
- Automated scoring of video interviews or other narrative assessment content
- Predictive modeling to identify applicants for screening or interview based on application information
- Predictive modeling to identify applicants who are likely to be successful and/or who will not attrite.



# Context, Challenges, Concerns



## 1. Legal and Ethical Considerations

- Post-2023 Supreme Court decision on affirmative action
- Varying levels of AI expertise and experience, including legal issues

## 2. Algorithmic Bias and Fairness

- Risk of perpetuating or amplifying biases in data
- Potential for group differences in outcomes

## 3. Resource Intensity

- High volumes of applications with limited resources
- Significant effort required to develop and maintain AI models

## 4. Transparency and Interpretability

- Limited transparency from some AI vendors ("black box" issue)
- Challenges in explaining decisions to applicants and decision-makers

## 5. Data Privacy and Security

## 6. Balancing AI and Human Judgment - Ensuring AI complements rather than replaces human expertise



# Building an Ethical Framework: AI Integration in Medical Education Admissions and Selection

## TAC Tasks:

- Develop guidelines for ethical and legally defensible AI
- Facilitate collaborative brainstorming sessions among TAC members
- Create educational resources
- Promote implementation of AI technologies



**In Progress**



# Building an Ethical Framework: AI Integration in Medical Education Admissions and Selection

## TAC Tasks:

- Develop guidelines for ethical and legally defensible AI
- Facilitate collaborative brainstorming sessions among TAC members
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- Promote implementation of AI technologies

## Deliverables

- Webinar on framework
- LSL Session Development
- Roadmap on AAMC related AI functions for Admissions and Selection
- A comprehensive framework

Mid Summer 2024



# Principles for Responsible AI in Medical School and Residency Selection

- 1. Balance Prediction and Understanding:** Ensure that AI tools deliver insights that not improve prediction and efficiency while being comprehensible and usable by the institution, aligning with its objectives and needs
- 2. Protect against Algorithmic Bias:** Rigorously assess and manage biases arising from historical data to ensure fair AI processes and outcomes
- 3. Provide Notice and Explanation:** Maintain transparency by informing applicants how AI is used and how it affects the assessment of their application
- 4. Protect Data Privacy:** Safeguard information with the utmost care, maintaining confidentiality at every step
- 5. Incorporate Human Judgment:** It is crucial to strike the appropriate balance between technology and the irreplaceable value of human judgment and ethical standards
- 6. Monitor and Evaluate:** Assess the outputs and outcomes of the AI system to ensure they remain fair, accurate, and aligned with institutional goals



# Have Questions?

Email Jayme Bograd at [jbograd@aamc.org](mailto:jbograd@aamc.org).



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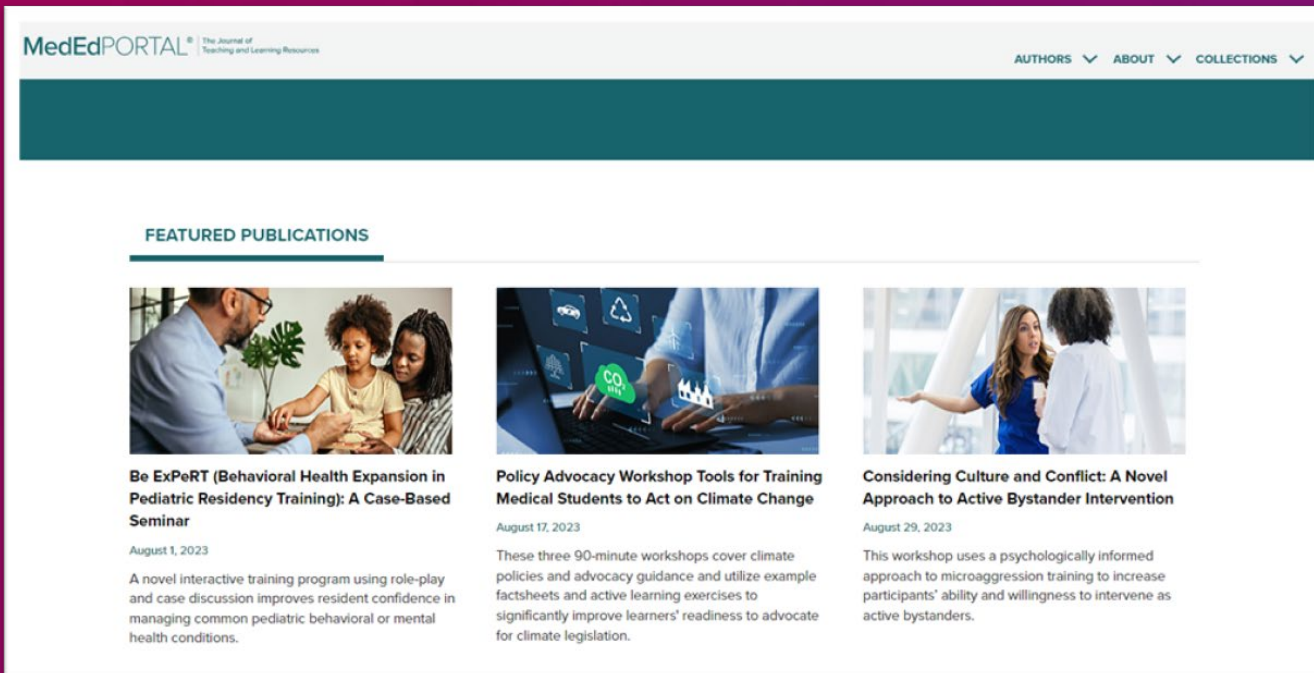
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Publication Title	Date	Description
<b>Be ExPeRT (Behavioral Health Expansion in Pediatric Residency Training): A Case-Based Seminar</b>	August 1, 2023	A novel interactive training program using role-play and case discussion improves resident confidence in managing common pediatric behavioral or mental health conditions.
<b>Policy Advocacy Workshop Tools for Training Medical Students to Act on Climate Change</b>	August 17, 2023	These three 90-minute workshops cover climate policies and advocacy guidance and utilize example factsheets and active learning exercises to significantly improve learners' readiness to advocate for climate legislation.
<b>Considering Culture and Conflict: A Novel Approach to Active Bystander Intervention</b>	August 29, 2023	This workshop uses a psychologically informed approach to microaggression training to increase participants' ability and willingness to intervene as active bystanders.

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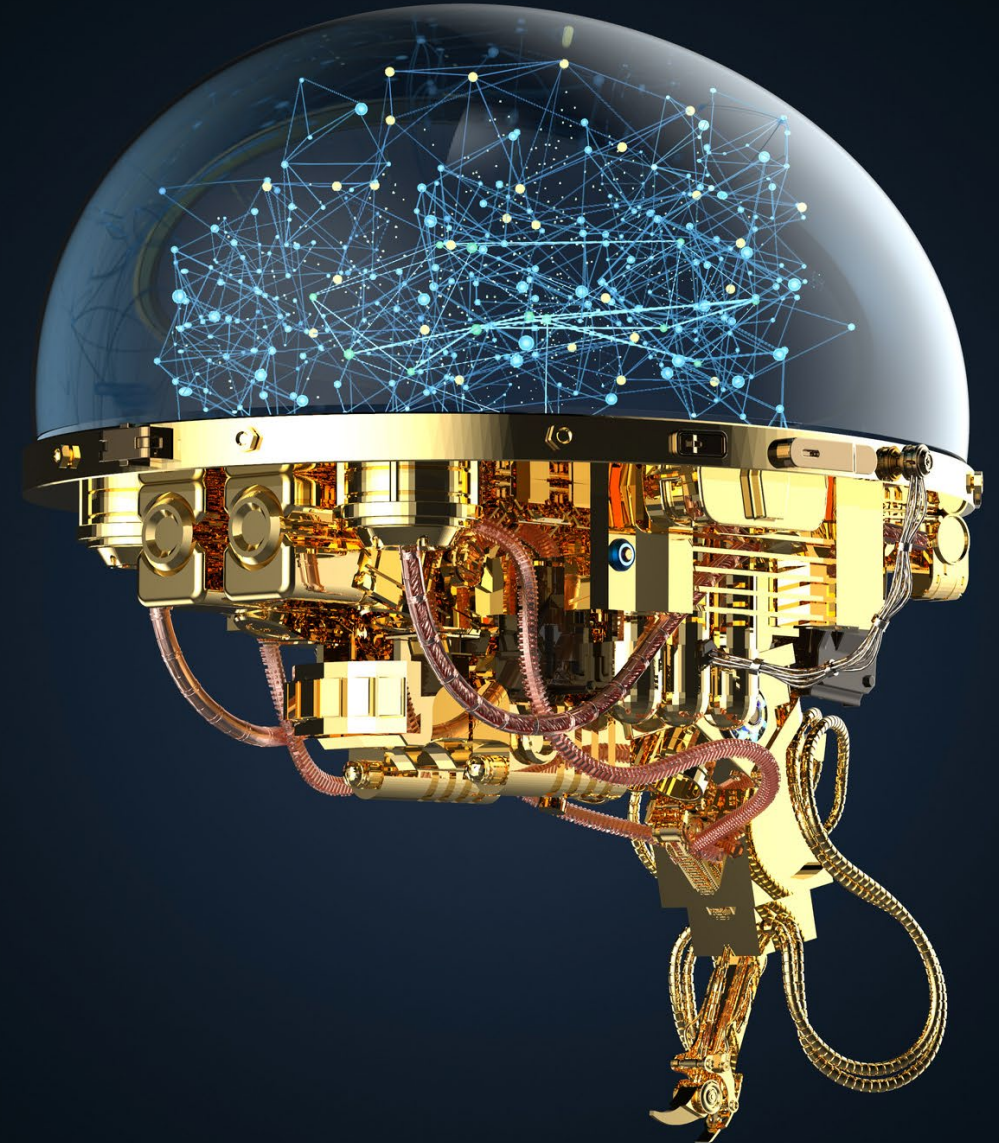
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- Key resources collection
- Discussion threads



Check out our ...

- AI and Academic Medicine webpage



# Upcoming AAMC AI Webinars

*Leveraging AI for Research & Innovation – Aug. 27, 2024*

*The Use of Artificial Intelligence (AI) Tools in the Scholarly Publishing Process:  
Considerations and Practical Suggestions for Scholars – Sept. 10, 2024*

# Past AAMC AI Webinars

*Leveraging AI to Support Operational Functions  
June 25, 2024*

*A Disruptive Connector:  
Learning & Experimenting with Generative AI Together  
June 11, 2024*

- *Video recording*
- *Presentation slides*
- *Q&A section summary*



**Register for the  
monthly series!  
And find  
resources from  
past webinars.**

# Learn Serve Lead 2024

***Nov. 9, 3pm ET – Join the session, “Charting the Ethical Course: AI in UME Admissions & GME Selection Processes”***

## ***Panelists:***

- ***Florence Xini Doo, MD, Director of Innovation, University of Maryland Medical Intelligent Imaging Center***
- ***Ephy Love, Ph.D., Head of Data, Thalamus***
- ***Fred Oswald, Ph.D. Director of Graduate Studies, Rice University***
- ***Rona Woldenburg, MD, Associate Dean of Admissions, Donald and Barbara Zucker School of Medicine at Hofstra***

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# Thank you!