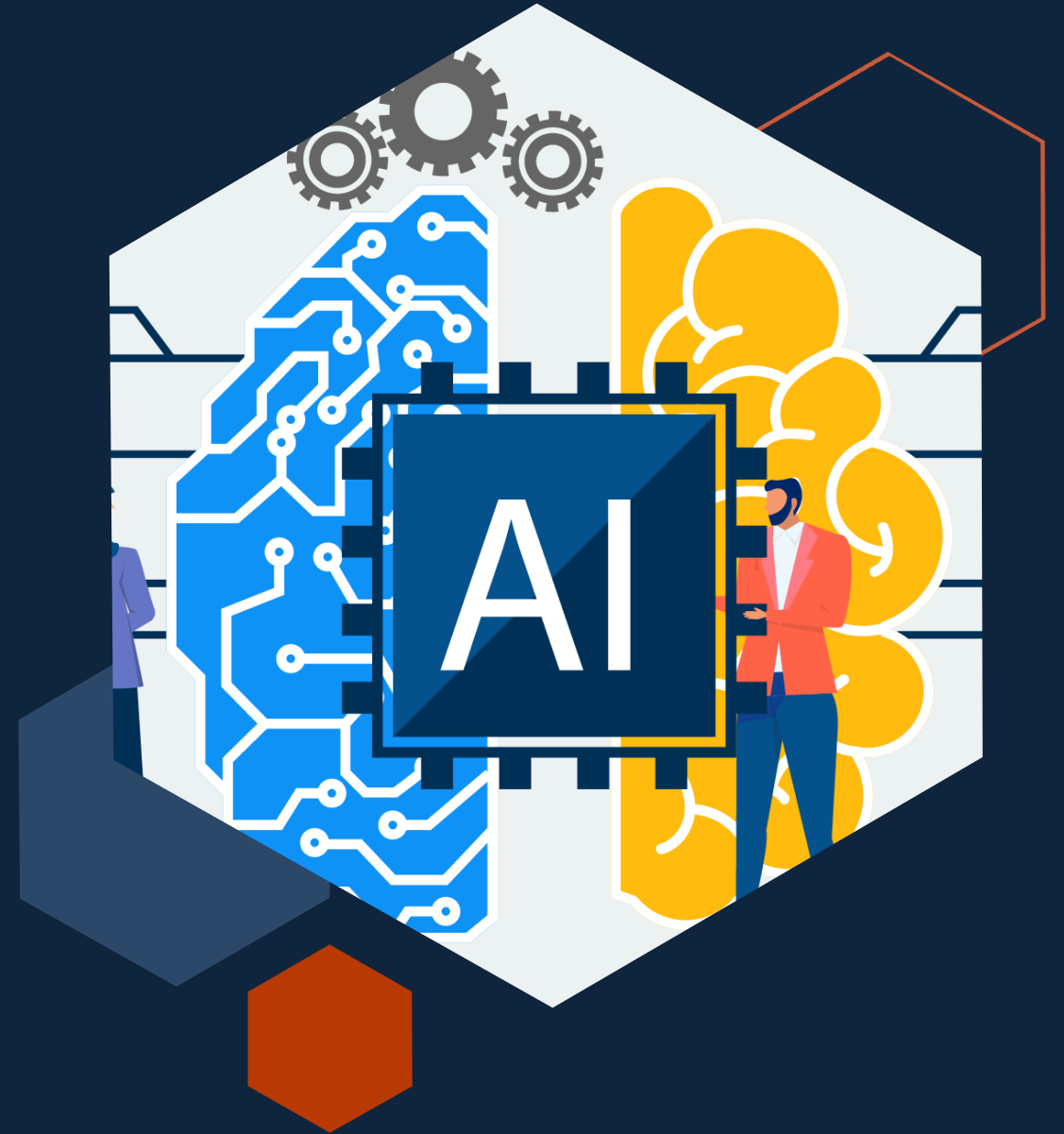


# Ethical Use of AI in the Peer Review Process


L Colby Mangum, PhD, ATC

Chris Kuenze, PhD, ATC, FNATA





# Agenda

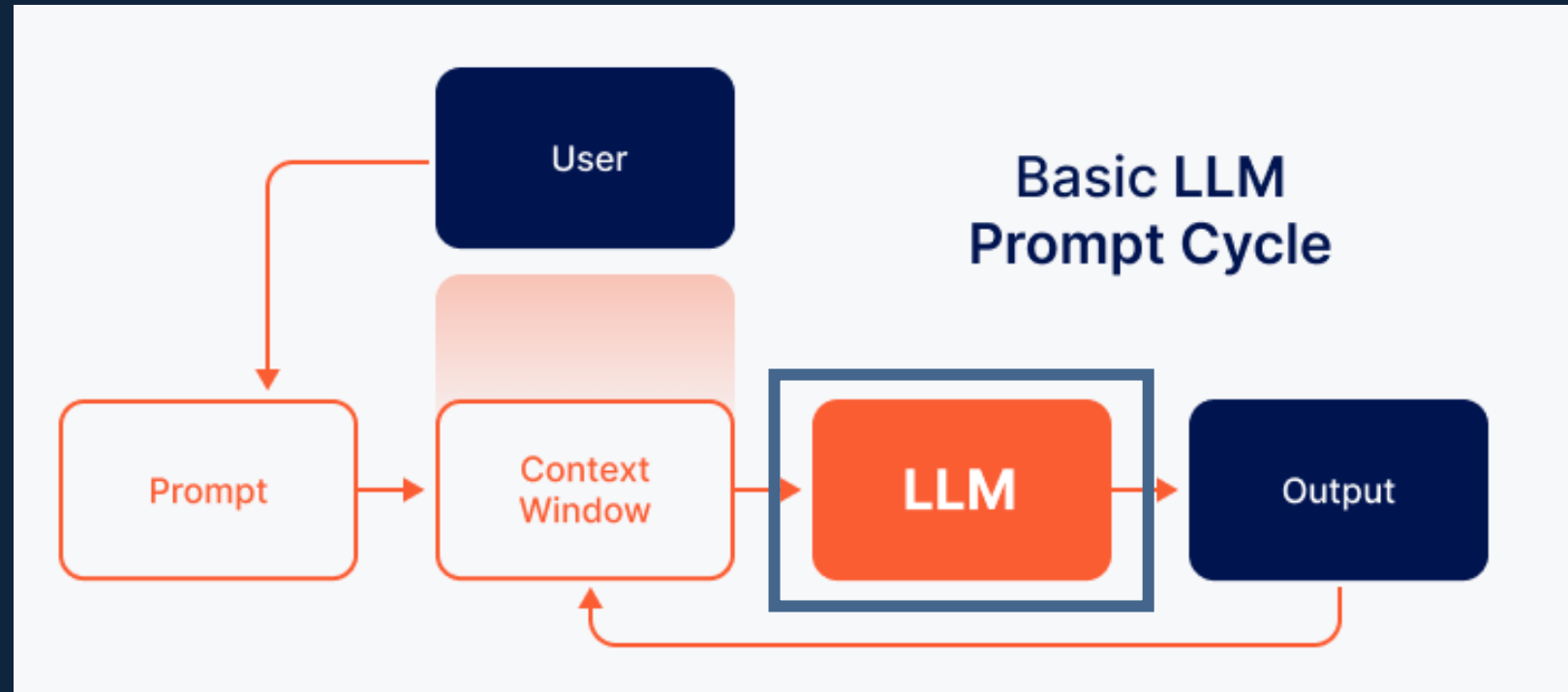
- 
- Generative AI and LLMs
  - Implications for Peer Review
  - Ethical Considerations
  - Guidance for Reviewers
  - Looking Forward

What are they? What can't they do?

# Generative AI and LLMs

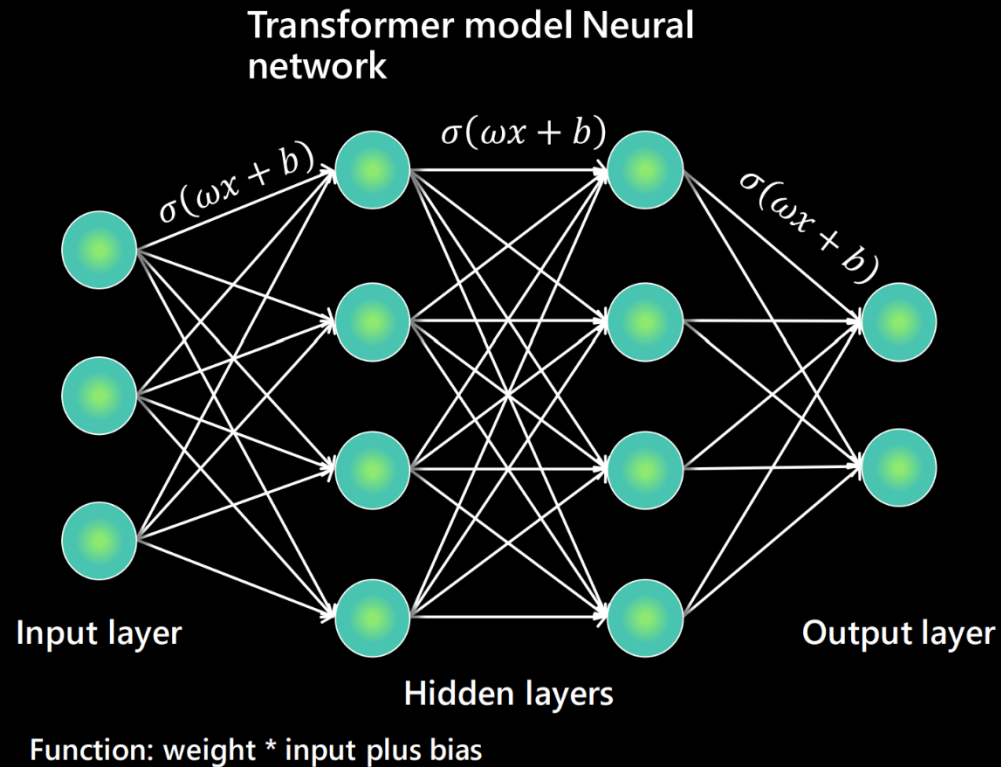


# Machine Learning and LLMs – What Are They?



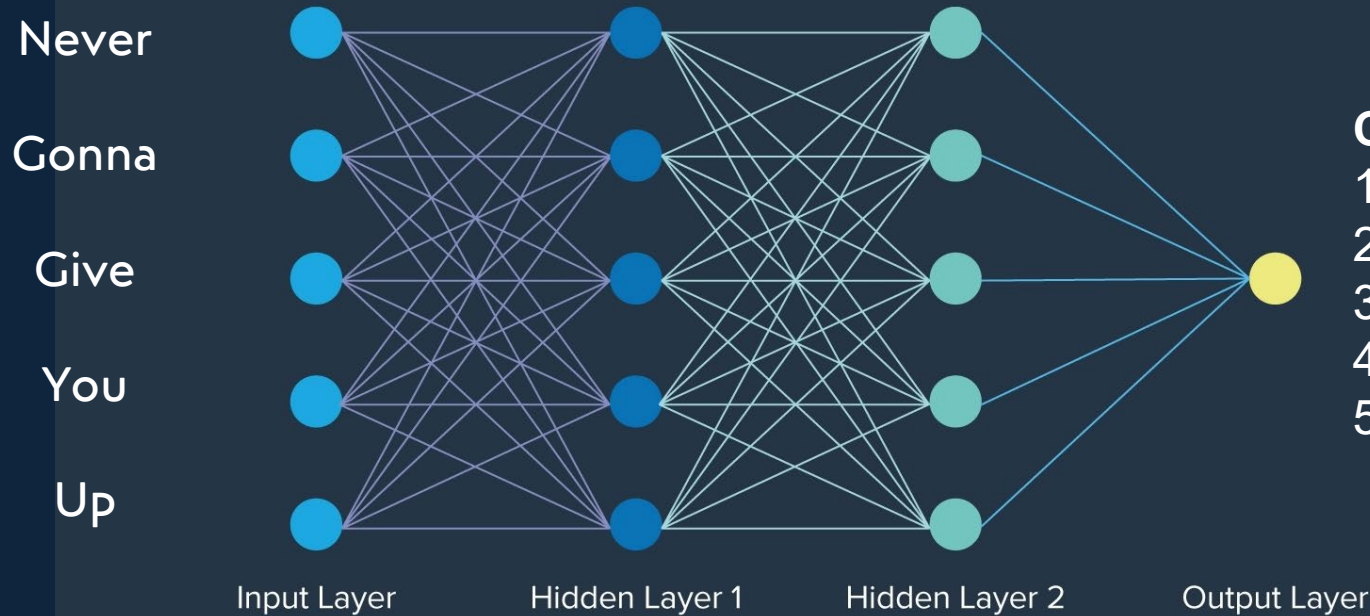
# Machine Learning and LLMs – What Are They?

User Input to  
Web Interface



Output in Web  
Interface

# Large Language Models – How Do They Work?

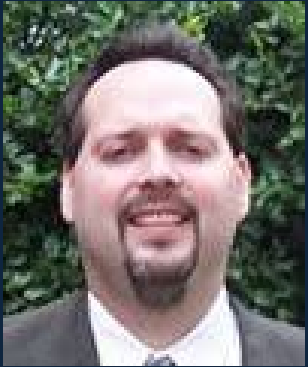


## ChatGPT 4.0 – 5 Best Options

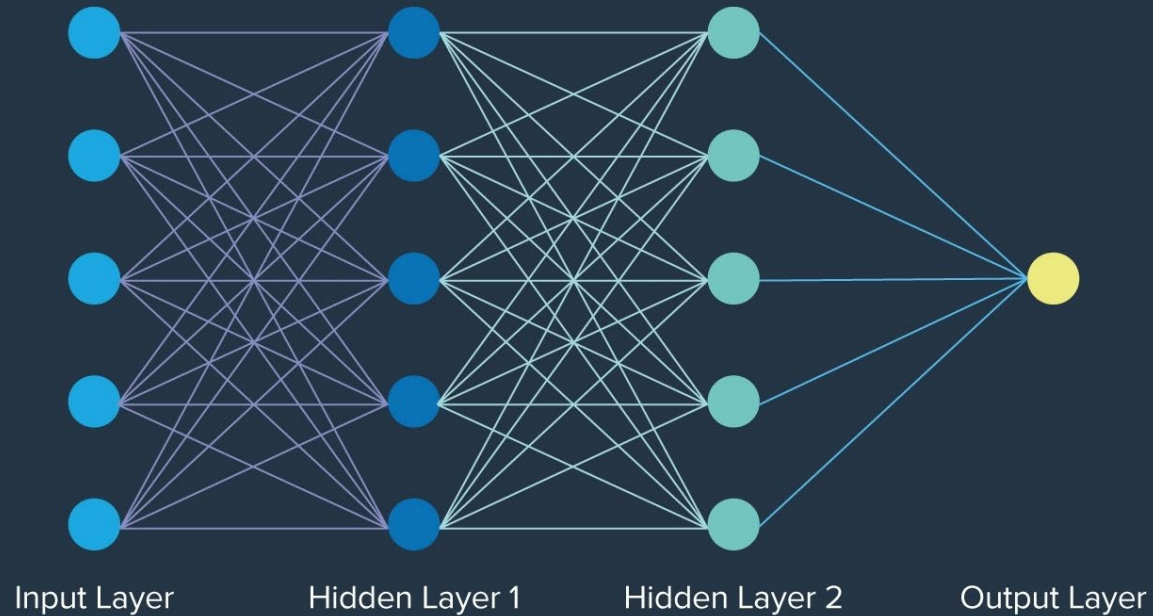
1. "Never gonna let you down"
2. "Never gonna skip leg day" "
3. "Never gonna ghost your texts"
4. "Never gonna share your secrets"
5. "Never gonna stop the beat"



# Machine Learning and LLMs – What Are They?



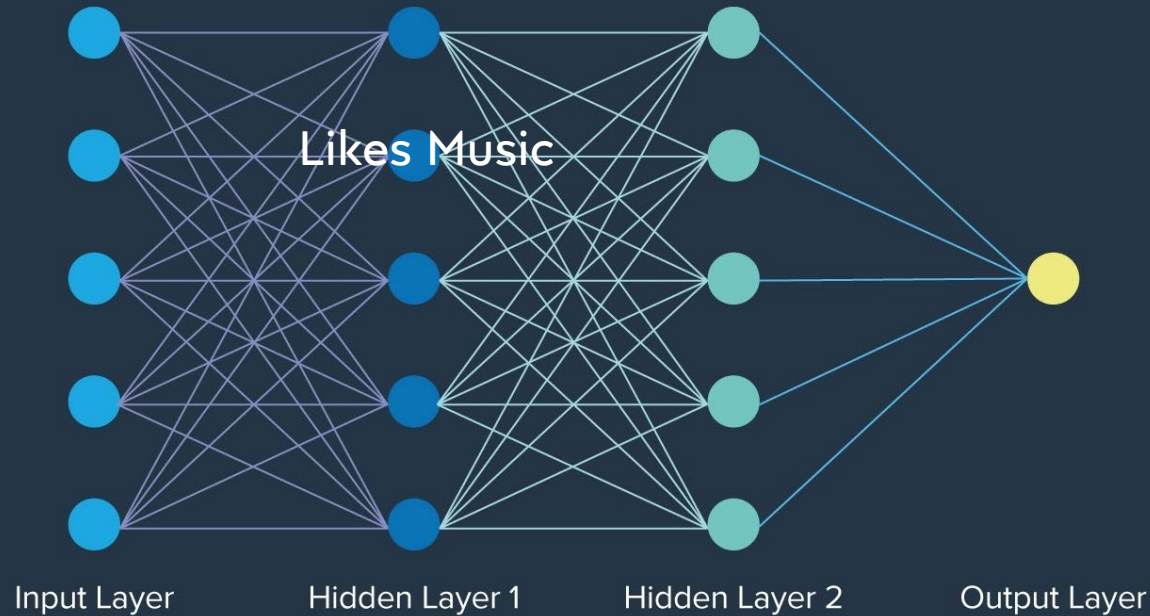
Never  
Gonna  
Give  
You  
Up



# Machine Learning and LLMs – What Are They?

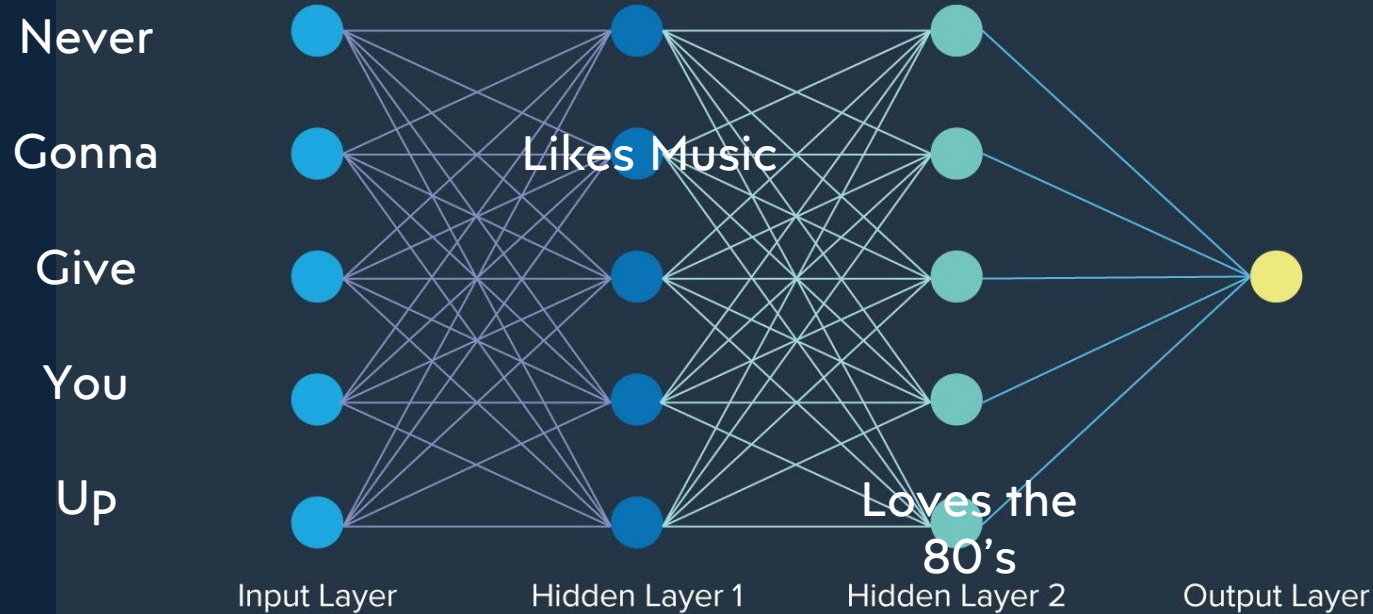


Never  
Gonna  
Give  
You  
Up



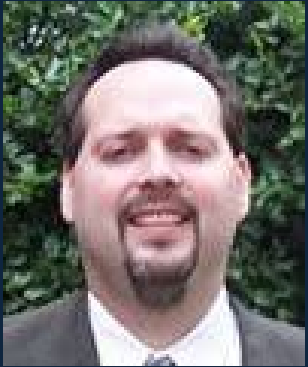


# Machine Learning and LLMs – What Are They?

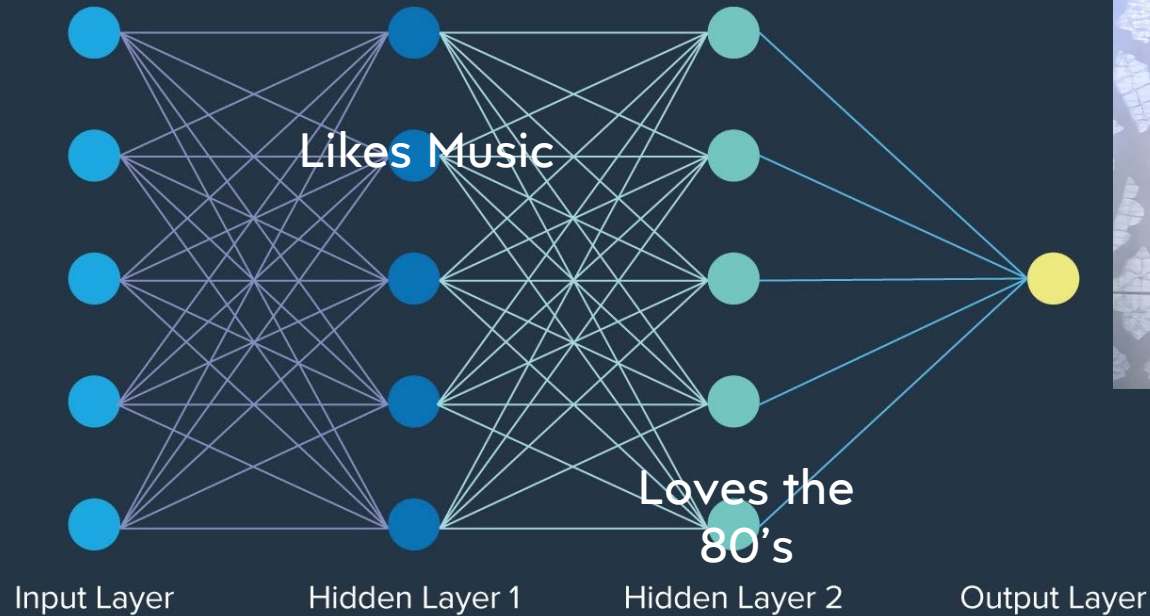


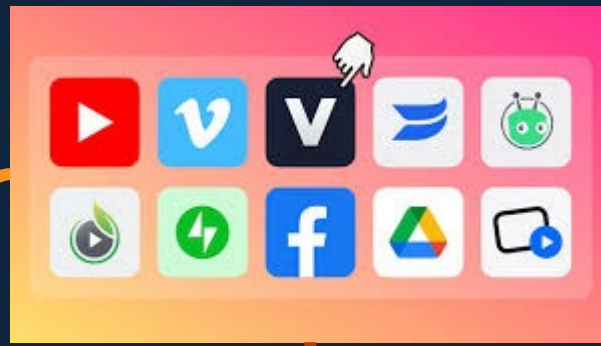
# Machine Learning and LLMs – What Are They?

*"Never Gonna Let You Down"*

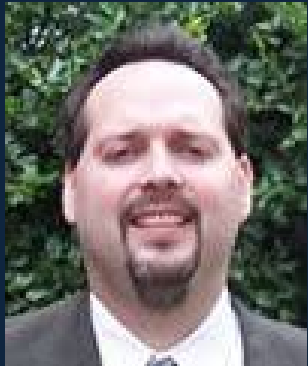


Never  
Gonna  
Give  
You  
Up

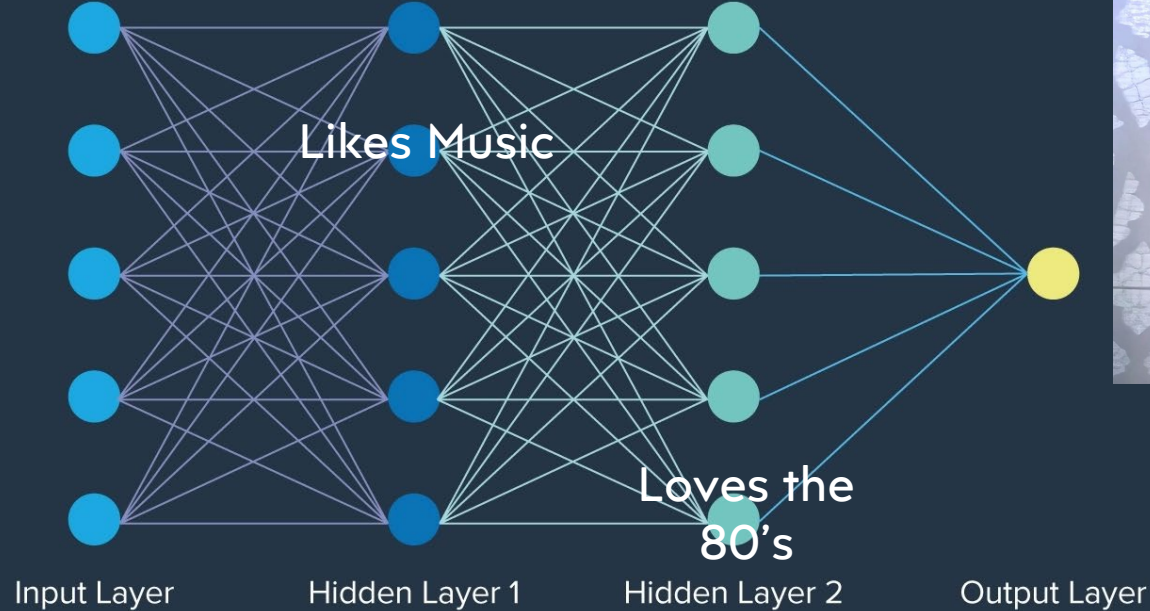




*"Never Gonna Let You Down"*

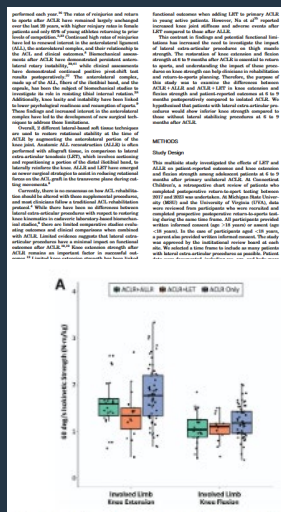


Never  
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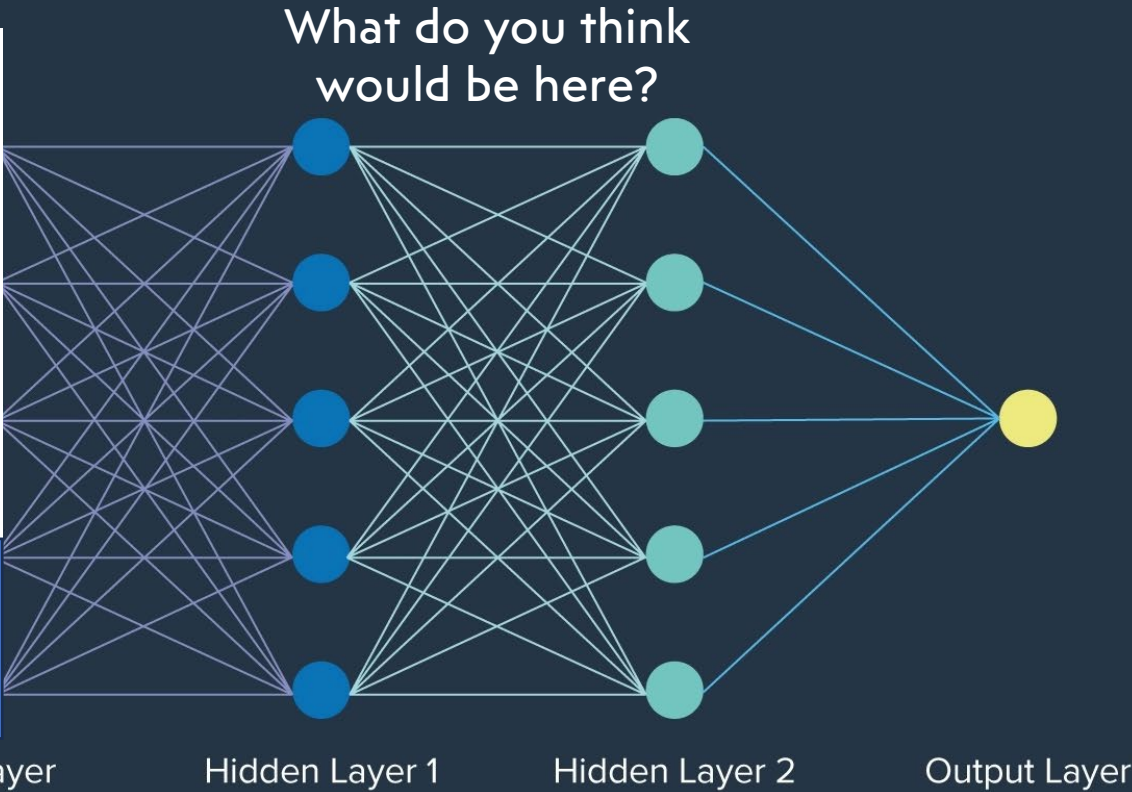


# How Did We Get Here?

# LLMs and Peer Review

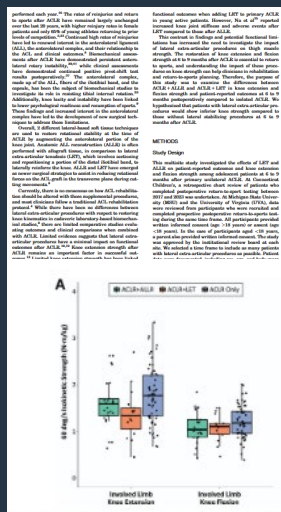


Query – You are a scientific reviewer. Critique the strength measures used in this study

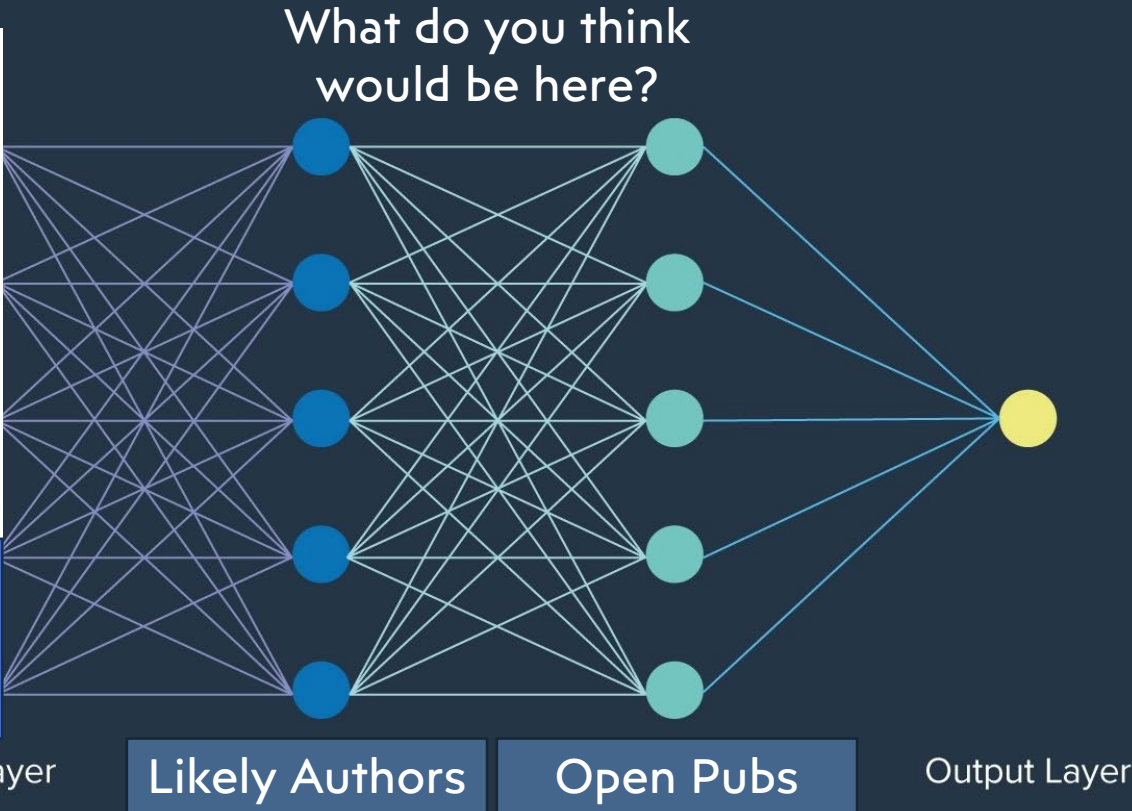




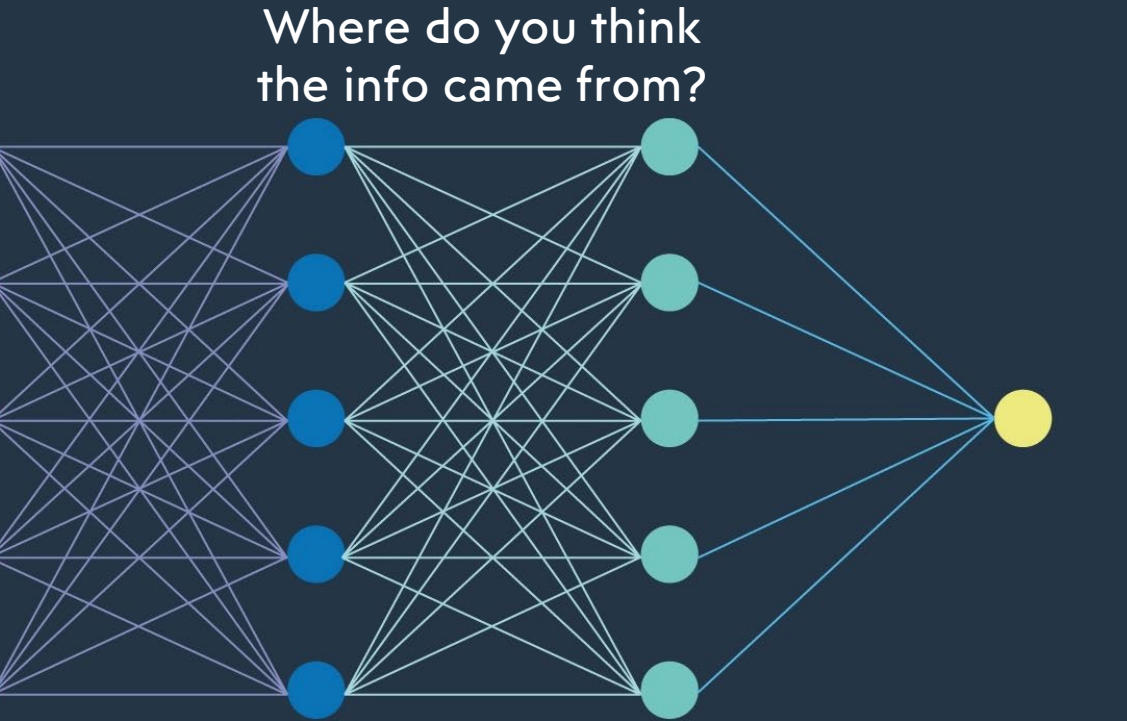
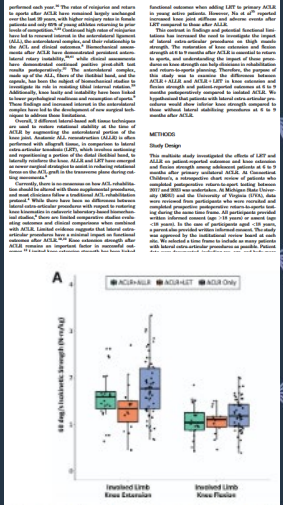
# LLMs and Peer Review



Query – You are a scientific reviewer. Critique the strength measures used in this study



# LLMs and Peer Review



Query – You are a scientific reviewer. Critique the strength measures used in this study

> Orthop J Sports Med. 2025 Jan 24;13(1):23259671241305999. doi: 10.1177/23259671241305999. eCollection 2025 Jan.

## Evaluation of Thigh Muscle Strength in Adolescent Patients After Anterior Cruciate Ligament Reconstruction With Lateral Extra-articular Tenodesis or Anterolateral Ligament Reconstruction

Adam P Weaver <sup>1</sup>, Matthew S Harkey <sup>2</sup>, Donna M Pacicca <sup>3</sup>, Allison E Crepeau <sup>3</sup>, Matthew J Brown <sup>3</sup>, Brian C Werner <sup>4</sup>, David R Diduch <sup>4</sup>, Christopher Kuenze <sup>3</sup>

Affiliations + expand  
PMID: 39866955 PMCID: PMC11760133 DOI: 10.1177/23259671241305999

**Abstract**  
**Background:** There has been increased interest in lateral extra-articular procedures, such as anterolateral ligament reconstruction (ALLR) or lateral extra-articular tenodesis (LET), to reduce anterolateral rotation instability of the knee after anterior cruciate ligament reconstruction (ACLR). Despite promising surgical outcomes with these techniques, their impact on knee strength recovery is unknown.

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### ACL TEARS - 5 TIPS FOR A SUCCESSFUL RECOVERY

Home // Media // Blog • ACL Tears - 5 Tips for A Successful Recovery

**Posted on:** 06-Feb-2023

We just completed the ice storm of 2023 in Texas. Where everything shuts down and I get a bit more time to write a blog.

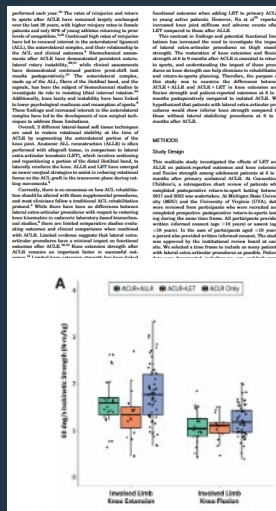
It's basketball season! I still see quite a bit of ACL injuries. I wanted to write an update on ACL injuries with current literature.

I get a lot of questions about ACLs. When can I return to play? Is it painful? Do I need to wear a brace afterwards? How much physical therapy do I need? What graft do you recommend?

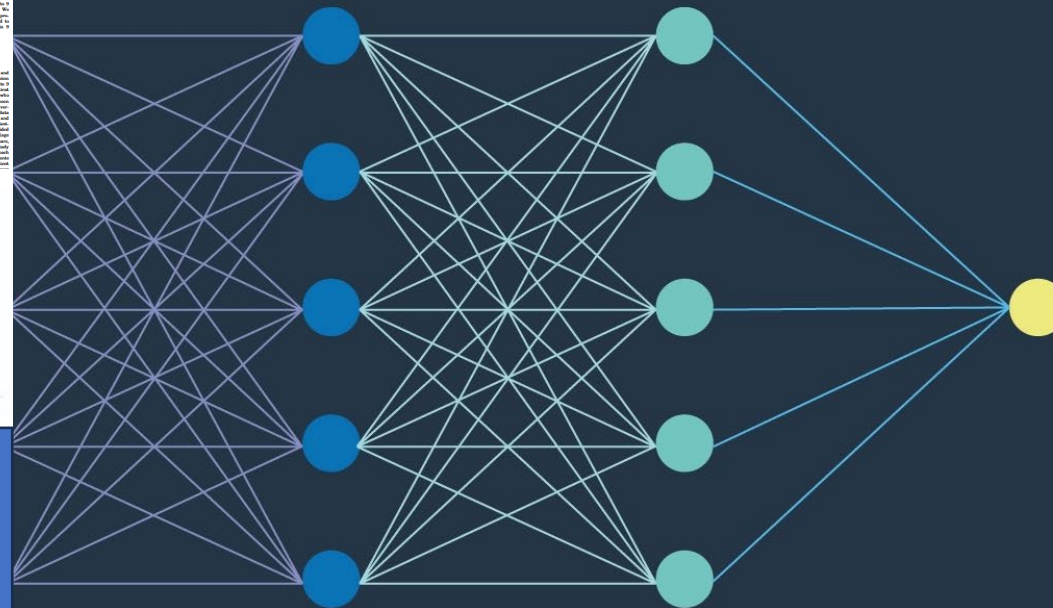
The truth is... there's a lot of differences of opinions in the Orthopedic Community regarding ACL reconstruction in athletes. You can see 5 different surgeons and get 5 different opinions. This does not necessarily mean they are all wrong. There are lots of great surgeons that have successful ACL



# LLMs and Peer Review



*Query – You are a scientific reviewer. Critique the strength measures used in this study*



Input Layer

## Likely Authors

## Open Pubs

## Output Layer

## What Are the Issues?





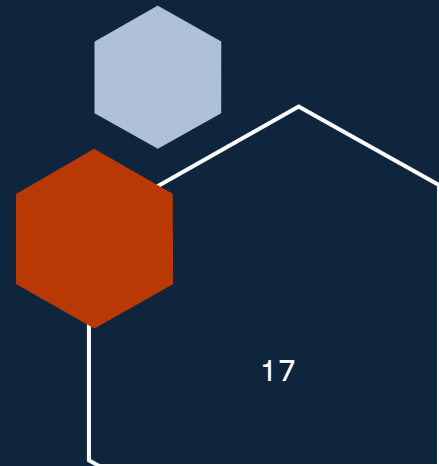
# Implications for Peer Review

What is already happening and what is on  
the horizon?



# Popularity of AI Tool Usage

- Peer review is not excluded from the exponential increase of AI tool usage across all areas, especially academia
- Researchers are utilizing AI technology and tools to innovate and increase efficiency
- Responsible usage of AI in manuscript preparation has gained more attention
- The role of AI in peer review is less understood and should be defined by journals and editorial boards





# Ethical Considerations

What are the potential issues with the use of AI in the review process?



# Potential Concerns

## Confidentiality and Data Privacy

- Reviewers should assume that text or documents entered into the system are stored and used to further train the AI model
- Includes AI models or platforms that provide guarantees of data privacy or opt-outs for data sharing
- Reviewers are expected to uphold the confidentiality of the peer review process and refrain from exposing unpublished content



# Potential Concerns

## Accountability and Transparency

- Peer reviewers are held accountable for their feedback, unlike AI models
- Reviewers using an LLM or other AI product as a tool (e.g., for verifying references or assessing adherence to author guidelines) must disclose this fact when submitting the evaluation



# Potential Concerns

## Bias and Judgment

- Reviewers are selected by the editorial board based on their subject matter expertise
- AI models can only use the information available to them, which is often largely unregulated
- Subject matter covered in *JAT* and *JAT-EP* also presents a concern for ensuring that clinical knowledge and expertise are represented in peer review
- New, innovative information cannot be fully evaluated by AI models due to their reliance on existing data



# Guidance for Reviewers

What should *JAT* and *JAT-EP* reviewers do when reviewing a paper?

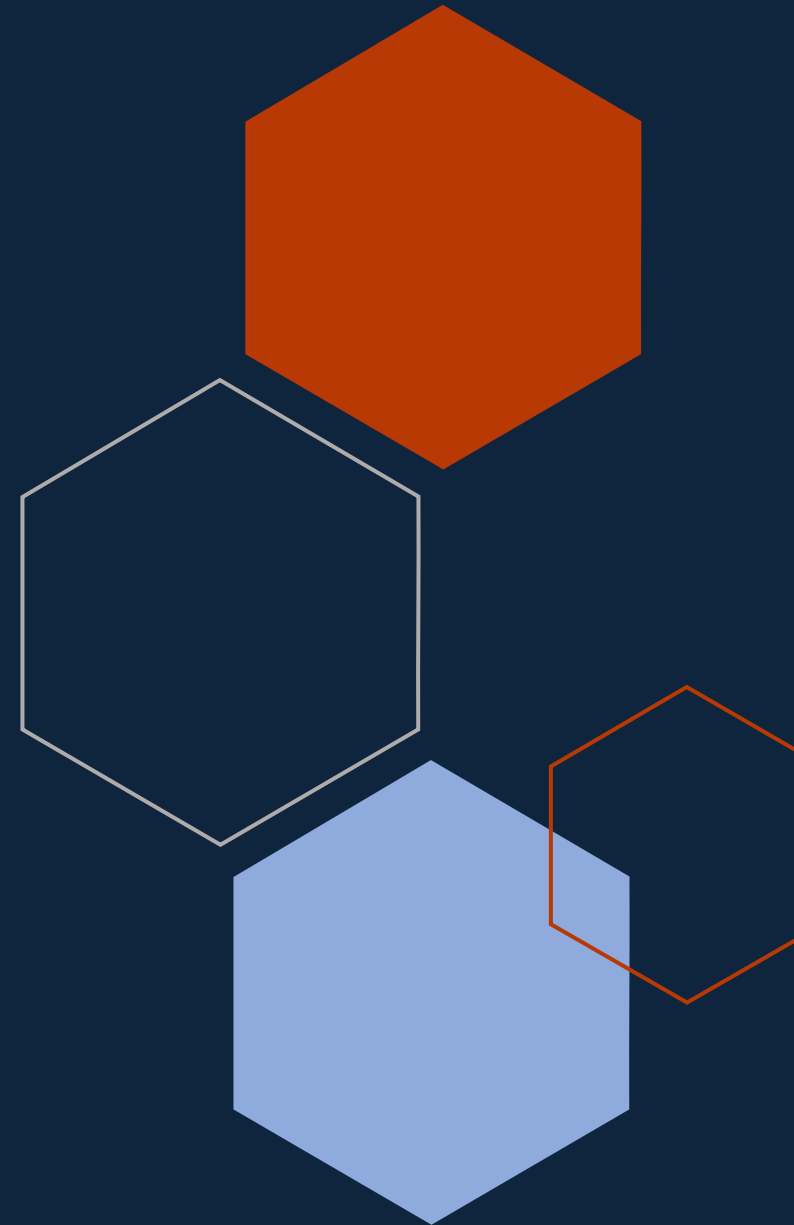


## Recommendation #1

- Full manuscripts or portions of manuscripts should NOT be uploaded to AI platforms
- This is regardless of whether the product is accessed via a personal or institutional license
- Authors retain copyright until publication and the text of the submission is not yours to share

## Recommendation #2

- At submission of a review, reviewers should disclose if and how AI was used in the production or editing of the submitted review
- This does not change recommendation #1





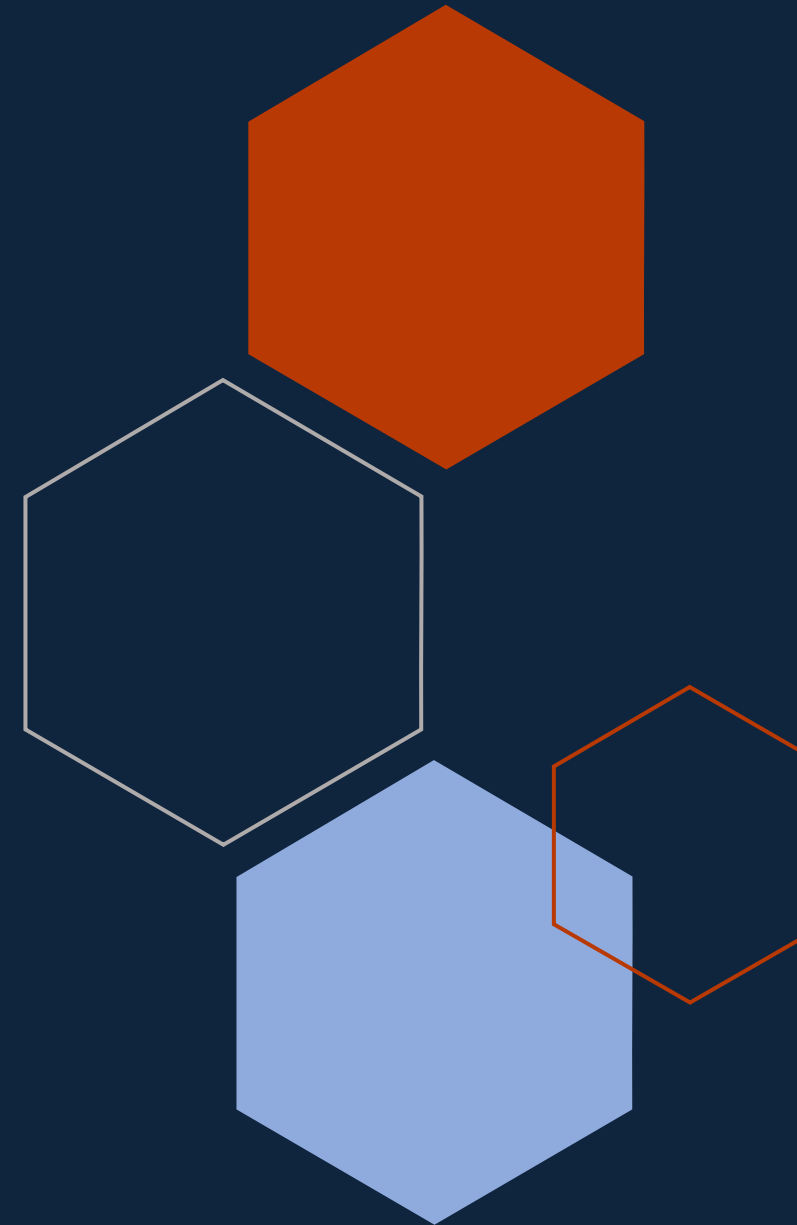


## Recommendation #3

- Reviewers should be able to assert that there is no plagiarism in their review produced by the AI, including text and images
- Human reviewers must ensure there is appropriate attribution of all quoted material, including full citations within their review.

## Recommendation #4

- If reviewers believe that AI was used in the preparation of a submission without disclosure by the authors:
  - Contact the section editor or associate editor responsible for managing the submission
  - Continue your typical review process until guidance is provided





# Looking Forward

What comes next?

A decorative graphic on the left side of the slide consists of a cluster of hexagons in various shades of blue, orange, and white, arranged in a honeycomb-like pattern. Some hexagons are solid colors, while others are outlined in white or orange.

# Thank You

L Colby Mangum

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Chris Kuenze

[cmk7sq@virginia.edu](mailto:cmk7sq@virginia.edu)