



JOHNS HOPKINS

WHITING SCHOOL  
*of* ENGINEERING

# TEACHING & LEARNING IN THE CHATGPT ERA

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Center for Learning Design  
and Technology



## Who we are...



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# What we are going to talk about...

1. Purpose of today's session
2. What is generative AI?
3. What are the technical challenges/opportunities
4. What are the pedagogical challenges/opportunities
5. What are the policy challenges/opportunities
6. Q&A

# Purpose

## Two Conversations on Generative AI

### 1. Broad

What do we need these intelligent machines to do for us, what do we prefer to do for ourselves, and where do we place value?

*We are not solving this today.*

### 2. Specific

How can we ensure students are learning effectively, and that we are teaching concepts and skills relevant in a world with generative AI?

*This is the goal for this presentation.*

## Disclaimer

- Each division or department may have different policies and recommendations.

# What is Generative AI?



## What is Generative AI?

Generative AI learns how to take actions from past data. It creates brand new content – a text, an image, even computer code – based on that training, instead of simply categorizing or identifying data like other AI.<sup>1</sup> The most popular example is OpenAI's ChatGPT.

What are the technical  
challenges/opportunities?

# Challenges: Cat-and-Mouse Game



## **Adaptability**

- Both the models and users can learn from data and evolve over time. Models will be harder to detect, users will be better at prompts and tools that evade detection.

## **Variability**

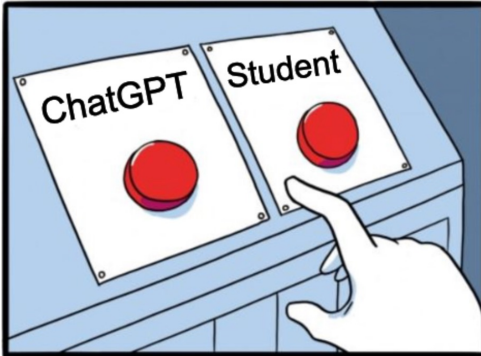
- Models produce content with a wide range of outputs that may not follow a specific pattern.

## **Lack of Ground Truth**

- There is no definitive reference point for comparison.



# Technical Challenges of Detection



Enhancements to AI Models (e.g., [connecting GPT to the internet](#))

Third-Party Add-on Services (e.g., [undetactable.ai](#))

Combination of Models ([Bard](#) + [Quillbot](#))



Increased User Prompt Literacy (e.g., [asking ChatGPT to rewrite flagged paragraphs](#))

Premium AI Plans with Emergent Features (e.g., [jasper.ai](#), [ChatGPT Plus](#), [Midjourney](#))

## AI Content Detection Tools

There are... a lot. But are they accurate?



## Test Scenario

- First draft of email for today's event was written by ChatGPT
- Email revised by human (me)
- Manually calculated actual similarity between first draft email and revised email was 59% AI generated
- Ran revised email through 9 AI detection tools

Actual AI  
generated  
content was  
**59%**



Detection Tool Name	Detection Result
OpenAI Detection	"Likely written by human"
GPTRadar	"Likely human generated"
Copyleaks	80% probability written by human
Crossplag	17% written by AI, 83% by human
Writer.com	4% written by AI, 96% by human
ZeroGPT	91% written by AI, 9% by human
Content at Scale	79% written by AI, 21% by human
TurnItIn	100% written by AI
Writefull	5% written by AI, 95% by human

And if that wasn't enough...

# Example of Challenge: undetectable.ai

## We create truly undetectable AI content.

We turn your flagged AI content into high-quality writing, that matches your brand, and is indistinguishable from human-written text.

Readability  Purpose

April 26 from 2 to 3 p.m. and will take place in Malone 228 and via Zoom. The purpose of this workshop is to explore the potential of generative AI tools for teaching and learning, as well as to discuss the challenges and ethical considerations of their use. The workshop will feature WSE faculty as well as staff from Academic Affairs and the Center for Learning Design and Technology, who will share their insights and provide updates on new tools, approaches, and policies on this topic. It will also be an opportunity to engage in discussions with experts and peers, exchange ideas and experiences, and ask questions. RSVP by April 25 to confirm your attendance. If you have any questions, please do not hesitate to contact us at cldtsupport@jhu.edu. We hope to see you at the workshop!  
Best,  
Center for Learning Design and Technology  
cldtsupport@jhu.edu

Character Limit: 1128/50000 ≈ 188 words

I agree to the terms of service (no academic misconduct)

**⚠️ Your content is detected as written by AI ⚠️**

Detection Likelihood

GPTZero  OpenAI  Writer  Crossplag  Copyleaks  Sapling  ContentAtScale  ZeroGPT

## University - General Writing - 188 words

### Result

Nathan,

Please join us for a unique opportunity to explore the possibilities and potential obstacles resulting from generative artificial intelligence (AI) tools on teaching/learning outcomes. To this effect, we have organized a hybrid workshop scheduled for Wednesday, April 26th between 2 p.m. until 3 p.m. located in Malone 228 as well as accessible through Zoom link situated hereinbelow..

We will tackle issues around effective deployment of generative AI alongside its ethical considerations. Join us for a comprehensive workshop on this key topic featuring leading professionals from within WSE's esteemed faculty as well as prominent staff members from both Academic Affairs and the Center for Learning Design Technology. The event is designed to provide participants with a wealth of information regarding new tools, strategies, policies surrounding this area of study.

Detection Likelihood

GPTZero  OpenAI  Writer  Crossplag  Copyleaks  Sapling   
ContentAtScale  ZeroGPT



### Original Submission

Dear Nathan,  
We would like to invite you to attend a workshop on potential opportunities and challenges of generative artificial intelligence (AI) tools on teaching and learning at the Whiting School of Engineering. The hybrid workshop will be held on Wednesday, April 26 from 2 to 3 p.m. and will take place in Malone 228 and via Zoom.  
The purpose of this workshop is to explore the potential of generative AI tools for teaching and learning, as well as to discuss the challenges and ethical considerations of their use. The workshop

But there are plenty of  
opportunities



# Technical Opportunities in Teaching and Learning

## **Accessibility**

Automated accessibility enhancements to platforms and content, and increased capabilities of the tools people use to consume the content. (e.g., accurate alt text for images, audio description, document tagging, layout adjustments; screenreaders with increased ability to provide context, etc.).

## **Personalized Learning**

Content and assignments that adapt to improve student learning outcomes, providing faculty insights into learner strengths and weaknesses,

## **24/7 Teaching Assistant**

Real-time student support for syllabus questions, help with basic concepts, and flag out-of-date course content for faculty.



# Risks

Generative AI models do not currently reflect the diversity of voices at JHU and may stereotype and misrepresent individuals and populations.

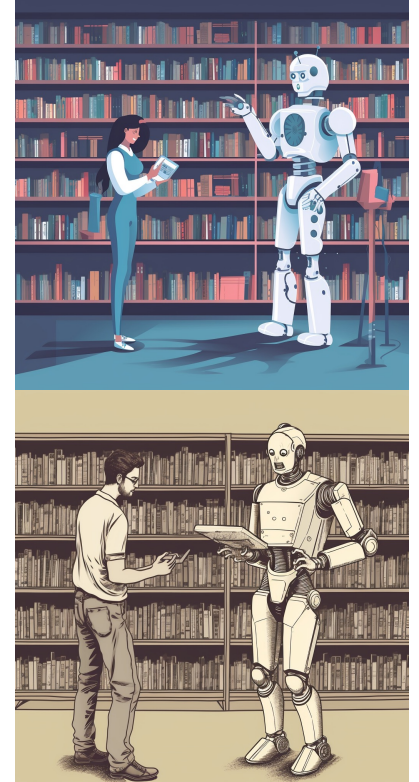
**Bias**

Be aware of what data you make accessible to generative AI as most data is incorporated back into the public model.

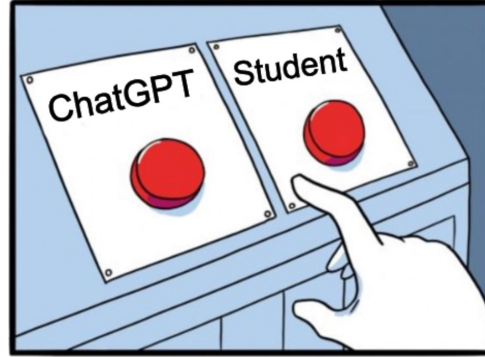
**Data Control**

Generative AI can produce very accurate seeming nonsense: imagining names, scholarly article titles, and facts.

**Convincing Fakes**



What are the pedagogical  
challenges/opportunities



## What are the pedagogical challenges and opportunities?

AI literacy is not something we can or should be seeking to eliminate. It is here. It is an astounding resource. So, we need to understand its capabilities and build curricula and assessments that focus on effective teaching & learning.

What are the **pedagogical challenges and opportunities?**

**focus on effective teaching & learning.**

# Teaching and learning

## Questions:

1) Do we want students to simply compile resources and parrot the conclusions back in a relatively structured way?

Or

2) Do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?

# What are the pedagogical challenges and opportunities?

Answers:

1. Do we want students to simply compile resources and parrot the conclusions back in a relatively structured way?

**No**

2. Or do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?

**Yes**

## Do we want students to simply compile resources and parrot the conclusions back in a relatively structured way?

PA

Do we want students to simply compile resources and parrot the conclusions back in a relatively structured way?




No, we don't want students to simply compile resources and parrot the conclusions back in a relatively structured way. Such an approach does not promote critical thinking, creativity, or deep understanding of the material. Instead, we want students to engage with the material, analyze it critically, and synthesize their own insights and perspectives.



To achieve this, educators need to provide opportunities for students to engage with the material in various ways, such as through discussions, debates, experiments, and projects. This helps students develop critical thinking skills and encourages them to make connections between different ideas.





## Do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?

PA

do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?



Yes, designing assessments that utilize research skills, new technologies, fact-checking, and critical thinking is important for preparing students for success beyond college. These skills are essential for success in the modern workforce, and assessments that encourage their development can help students become more confident and competent in applying them.



Connecting these assessments with real-world situations and the work that students will do after college can also be beneficial. By framing assessments in this way, students may be more motivated to engage with the material and develop a better understanding of how these skills apply to their future careers.

Furthermore, incorporating new technologies into assessments can help students become more comfortable with technology and its applications in their future careers. This can include using virtual simulations, online research tools, and data analysis software to help students develop skills that are relevant in today's job market.



do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?



< 2 / 3 >



Yes, designing assessments that incorporate research skills, new technologies, fact-checking, and critical thinking can be highly beneficial for students. Such assessments not only help students acquire valuable skills but also prepare them for the workforce.



With the advent of new technologies, the workplace is becoming increasingly complex, and employers are looking for individuals who possess advanced skills in research, analysis, and critical thinking. By incorporating these skills into assessments, students can develop these skills while still in school, thereby enhancing their employability.

Furthermore, assessments that are designed to connect with the work students will do after college can provide a better understanding of the practical applications of the skills they learn. This approach can motivate students to learn and apply their knowledge in a real-world context.

do we want to design assessments that utilize research skills, new technologies, fact-checking, and critical thinking, delivered through ways that connect with the work they do after college?

< 3 / 3 >



Yes, designing assessments that utilize research skills, new technologies, fact-checking, and critical thinking can be highly beneficial for students as it prepares them for their future careers. In today's fast-paced and technology-driven world, employers are looking for individuals who possess these skills, and having these skills can provide a significant competitive advantage.

Assessments that incorporate these skills can take many forms, such as research papers, presentations, group projects, and online quizzes. In addition, assessments can be delivered through various ways, such as online platforms, in-person discussions, or through experiential learning opportunities.

It is also important to make sure that assessments are designed in a way that connects with the work students will do after college. This can be achieved by using examples from real-life scenarios or incorporating industry-specific knowledge into the assessment. By doing so, students will be better equipped to apply the skills they have learned in the classroom to the real-world situations they will encounter in their future careers.



# Research-supported teaching & learning principles: CAAS

Learners should have opportunities to work with and learn from others, which can enhance their understanding and deepen their engagement with the material.

**Collaborative**

Learners should be actively engaged in the learning process rather than just passively receiving information.

**Active**

Learners should engage in activities that are either carried out in real-world contexts or have a high transfer to a real-world setting. It should have personal and cultural relevance.

**Authentic**

Learners should revisit and review material at spaced intervals rather than just cramming everything in at once. This can help to strengthen memory and retention.

**Spaced  
Retrieval**

## How these principles translate to assessment

If we incorporate collaborative, active, authentic, and spaced retrieval (CAAS) practices throughout the learning experience (both through engagement with the materials and assessment) then we:

1. Improve student learning
2. Reduce the risk of academic misconduct
3. Create a culture of academic honesty

# Designing assessments that cultivate integrity and effective learning

Assessment	Cultivation	Description
Exam	Two stage exams	An individual exam is followed by a group-collaborative exam.
Problem Set	Process Descriptions	Students describe and demonstrate their process of completing an assignment.
Projects	Peer Review	Students assess the performance of their peers.
Case-based	Real-world problems	Students engage with real-world case studies with fictional or real clients/customers.
Writing	Scaffolding	Students engage in multi-draft processes that encourage reflection and feedback from others.
Discussions	Lived experiences	Students reflect on and share ways the topic(s) connect back to their lived experiences/work (personal and professional).

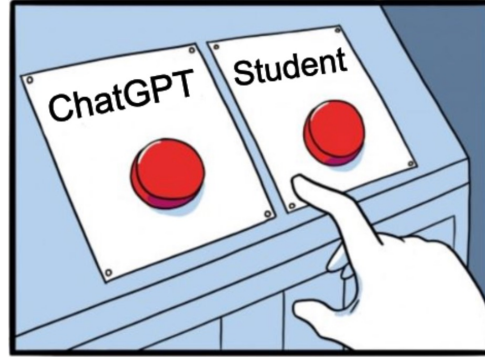
● December 05, 2022

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# Freaking Out About ChatGPT—Part I

Artificial intelligence can crank out passable student essays in seconds. What are we going to do?

By [John Warner](#)





● December 14, 2022

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## Guest Post: AI Will Augment, Not Replace

A guest post from Marc Watkins of the University of Mississippi, the second in a likely series on freaking out about ChatGPT.

By [Marc Watkins](#)



## Top Tips

- 1) Place language in your syllabus on the use of AI tools.
- 2) Don't try to beat the system.
- 3) Focus on research-supported teaching and learning practices (CAAS)
- 4) Integrate ways to add authenticity to your assessments to enable effective learning and reduce the risk of academic misconduct.

# Resources

## List of resources

- CLDT: <https://engineering.jhu.edu/cldt/>
- Faculty Forward Academy: <https://facultyforward.jhu.edu/sessions/recordings/>
- Teaching and Technology Support & Resources: <https://support.cldt.jhu.edu/hc/en-us>
- Active Learning Workshop in Canvas: <https://jhu.instructure.com/courses/40234>

What are the policy  
challenges/opportunities

# Policy Challenges

## How, if at all, is ChatGPT addressed in the academic misconduct policy?

Unless restricted by your course syllabus, the use of ChatGPT or other generative artificial intelligence (AI) technology itself does not violate the academic misconduct policy.

However, presenting the output of these tools as one's own work is considered plagiarism, and using these tools on assessments where they are forbidden is a form of cheating.

In these cases, faculty members should follow the process for reporting and resolving academic misconduct as outlined in the applicable policy:

- [Graduate Academic Misconduct Policy](#)
- [Undergraduate Academic Ethics Policy](#)

How to detect use of ChatGPT/etc. with certainty?

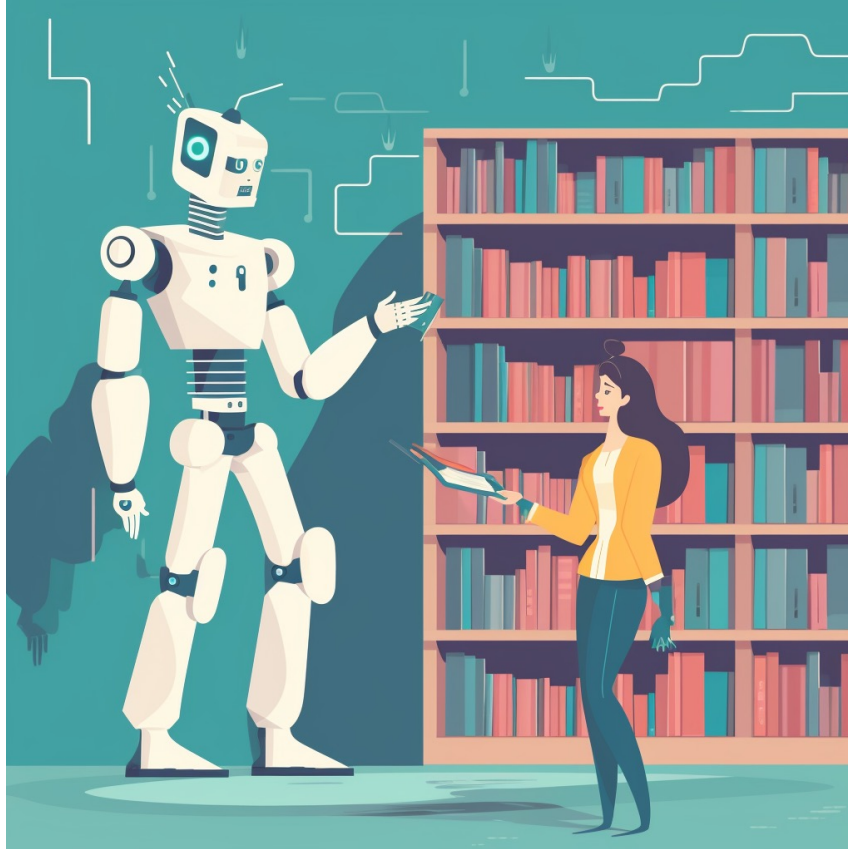
- Not as clear cut; different detection results on same samples- but is a start towards a conversation.
- Ask students how they arrived at their answer and ask them to explain the full concepts behind answer

# Policy Opportunities

## Supporting Students in Avoiding Academic Misconduct and Learning Ethical Use of New Technologies

- Consider addressing ChatGPT or other generative artificial intelligence (AI) technology on your course syllabus (e.g., let students know that you run all assignments through an AI detection tool such as TII)
- Consider discussing the use of ChatGPT and other generative artificial intelligence (AI) technology in your discipline with your students, sharing the possibilities and responsibilities of using it for related applications. Encourage your students to approach and explore technology with an eye for ethical use and responsibility and not as a ‘forbidden’ technology.
- Reach out to the CLDT to learn about assessment practices that reduce the risk of academic misconduct by students.
- Reach out to CLDT Support to learn about generative AI detection tools, such as Turnitin (TII) in Canvas *Be mindful that the detection tools are not perfected.*
- Reach out to your department or program’s Academic Integrity Officer for support when academic misconduct is suspected in your course.

# Discussion



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