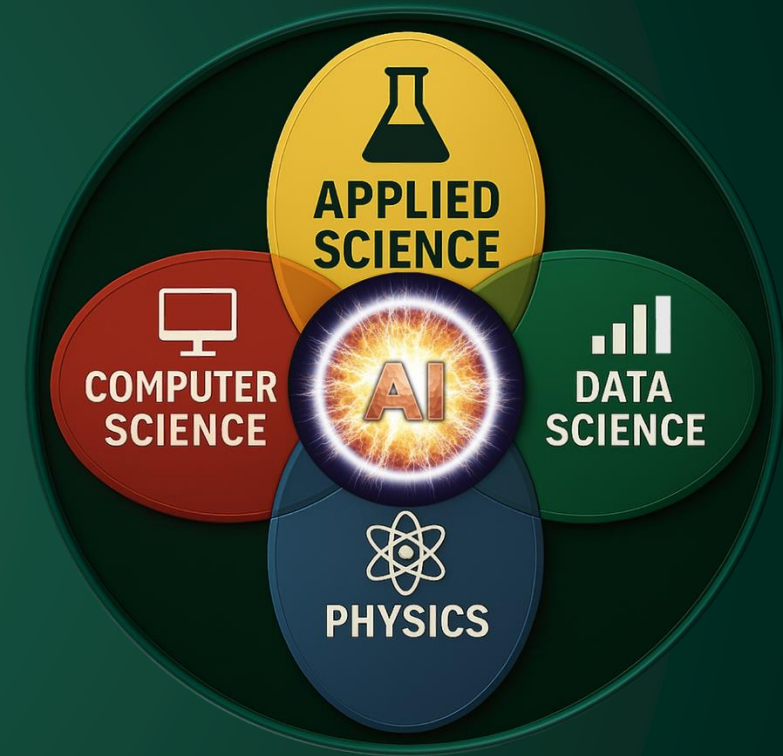


# Navigating Our AI-Augmented Future



**Dr. Douglas C. Schmidt**  
[dcschmidt@wm.edu](mailto:dcschmidt@wm.edu)  
[www.cs.wm.edu/~dcschmidt](http://www.cs.wm.edu/~dcschmidt)

**Dean of Computing,  
Data Sciences & Physics**



# My Background & William & Mary Connections

My connections with W&M go back 100+ years!

Vol. XXVII. No. 1

APRIL, 1933

BULLETIN

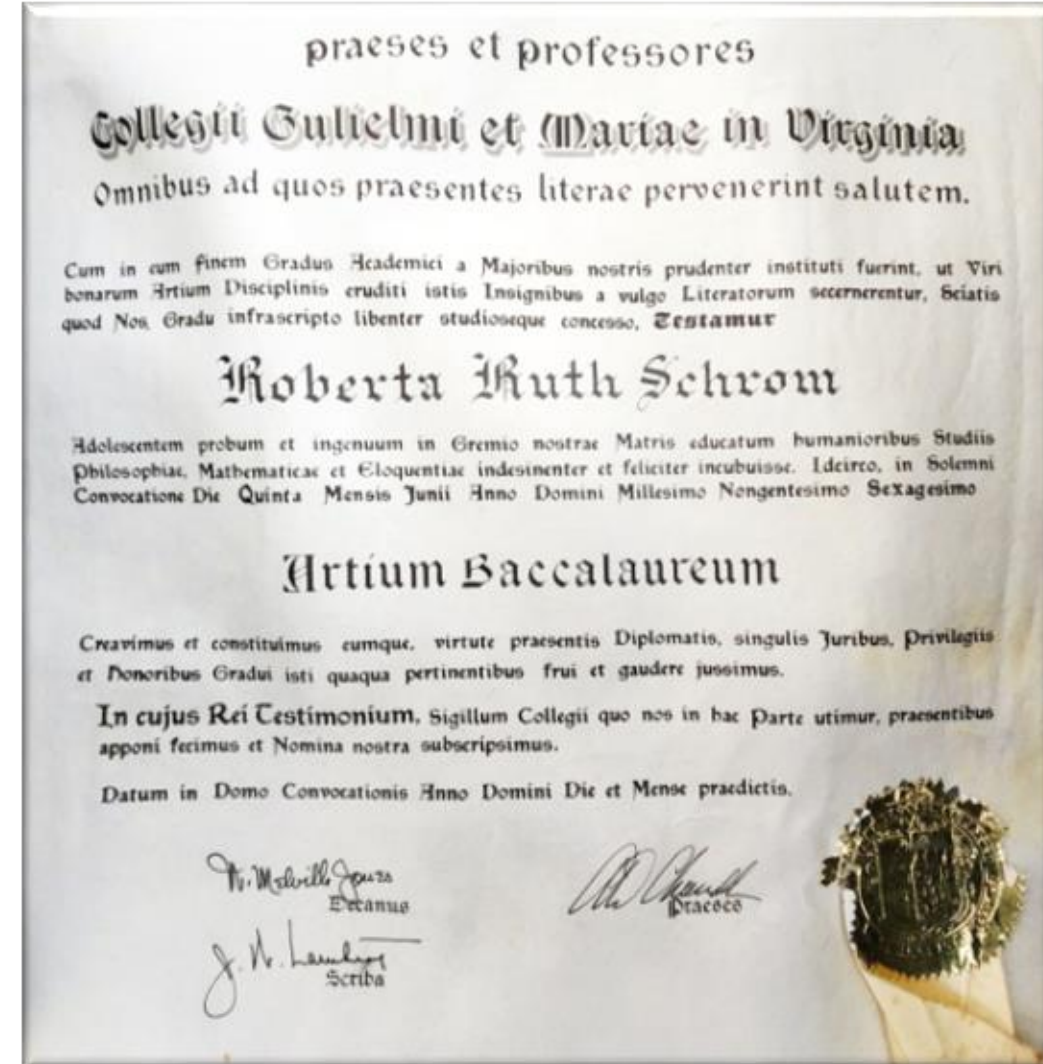
The College of William and Mary  
in Virginia



HENRY C. KREBS, B.S., A.M.-----*Associate Professor of Education*  
B.S., 1889, State Normal College, Kutztown, Pa.; A.M.,  
1923, Rutgers College, New Jersey; County Superintendent of  
Schools, New Jersey, 1902-23; Professor of English Literature,  
College of Mount St. Mary, N. J., 1916-23; Member New Jer-  
sey State Board of Examiners, 1912-23; Instructor in Methods  
of Teaching, University of Virginia Summer School, 1918—;  
Associate Professor of Education, College of William and Mary,  
1923—.

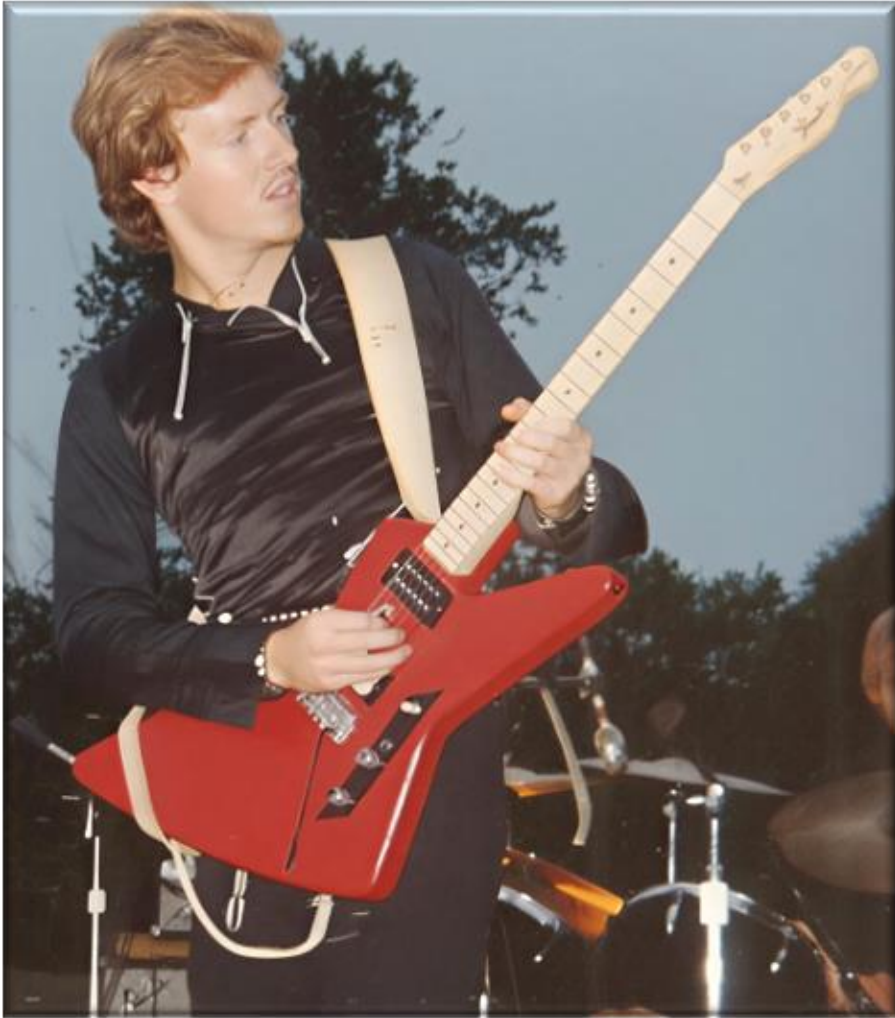
# My Background & William & Mary Connections

My connections with W&M go back 100+ years!



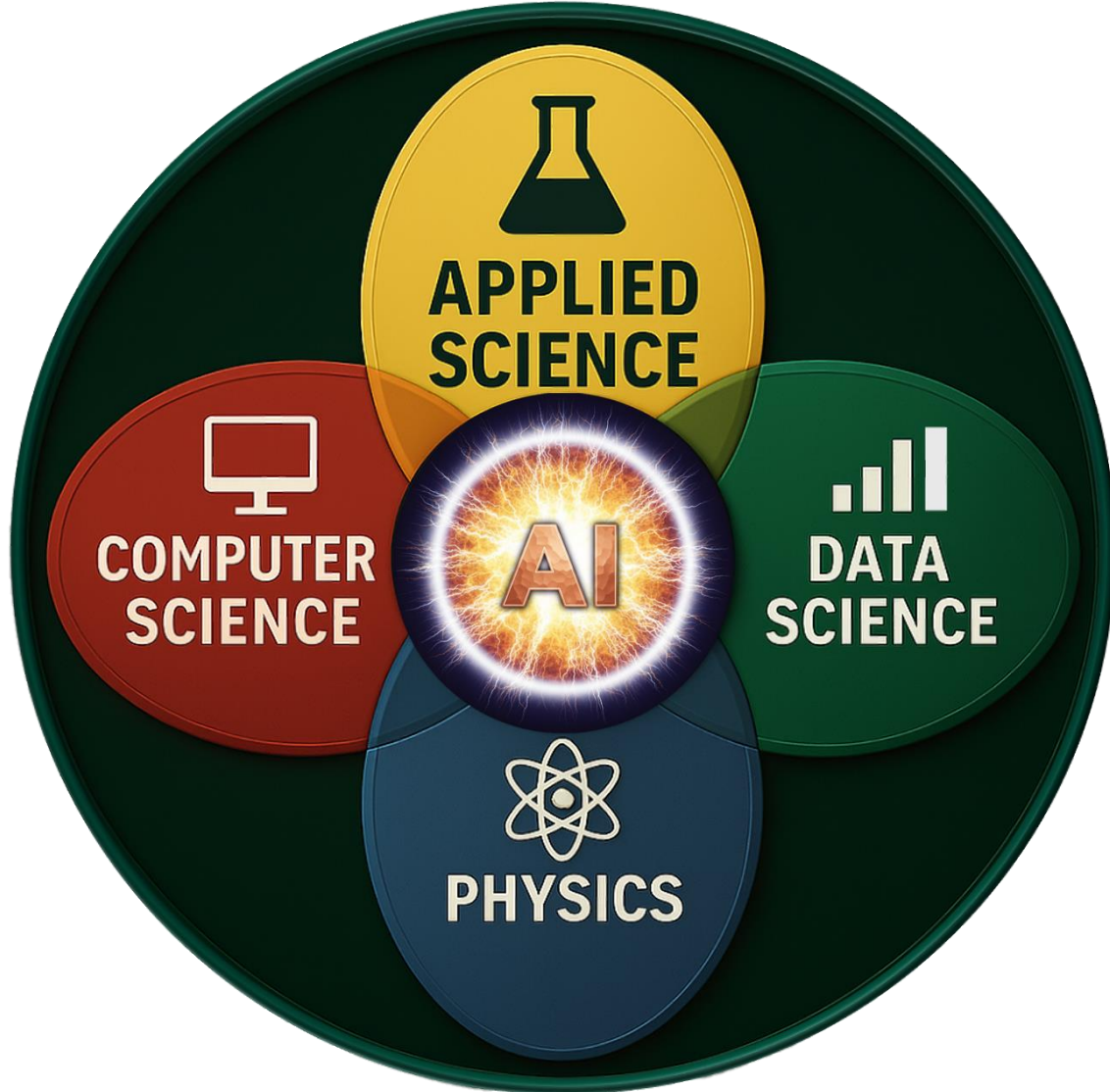
# My Background & William & Mary Connections

**My connections with W&M go back 100+ years!**



**Predictions are Hard —  
Especially About the Future**

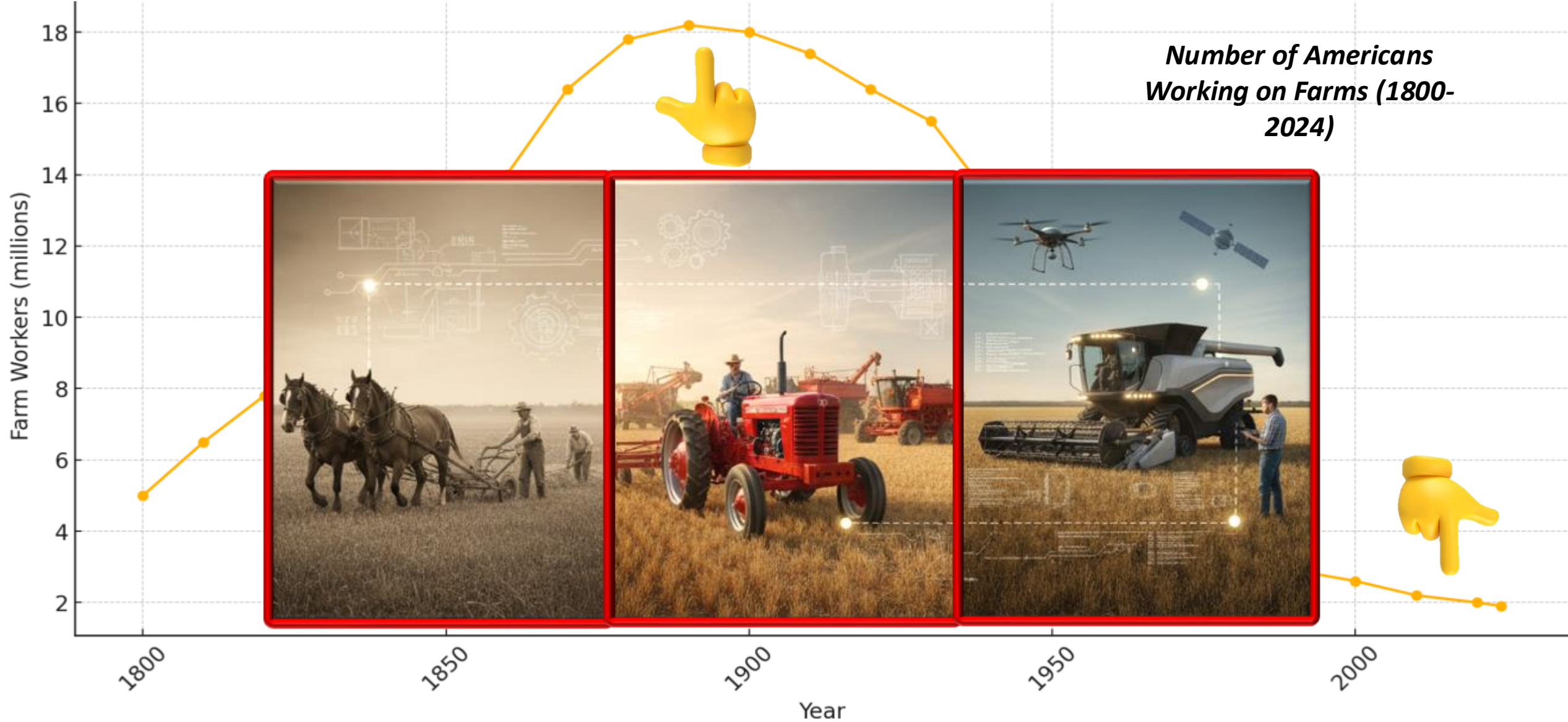
# Predictions are Hard — Especially About the Future



See: [cdsp.wm.edu/about/leadership/meet-the-team/schmidt-doug.php](https://cdsp.wm.edu/about/leadership/meet-the-team/schmidt-doug.php)

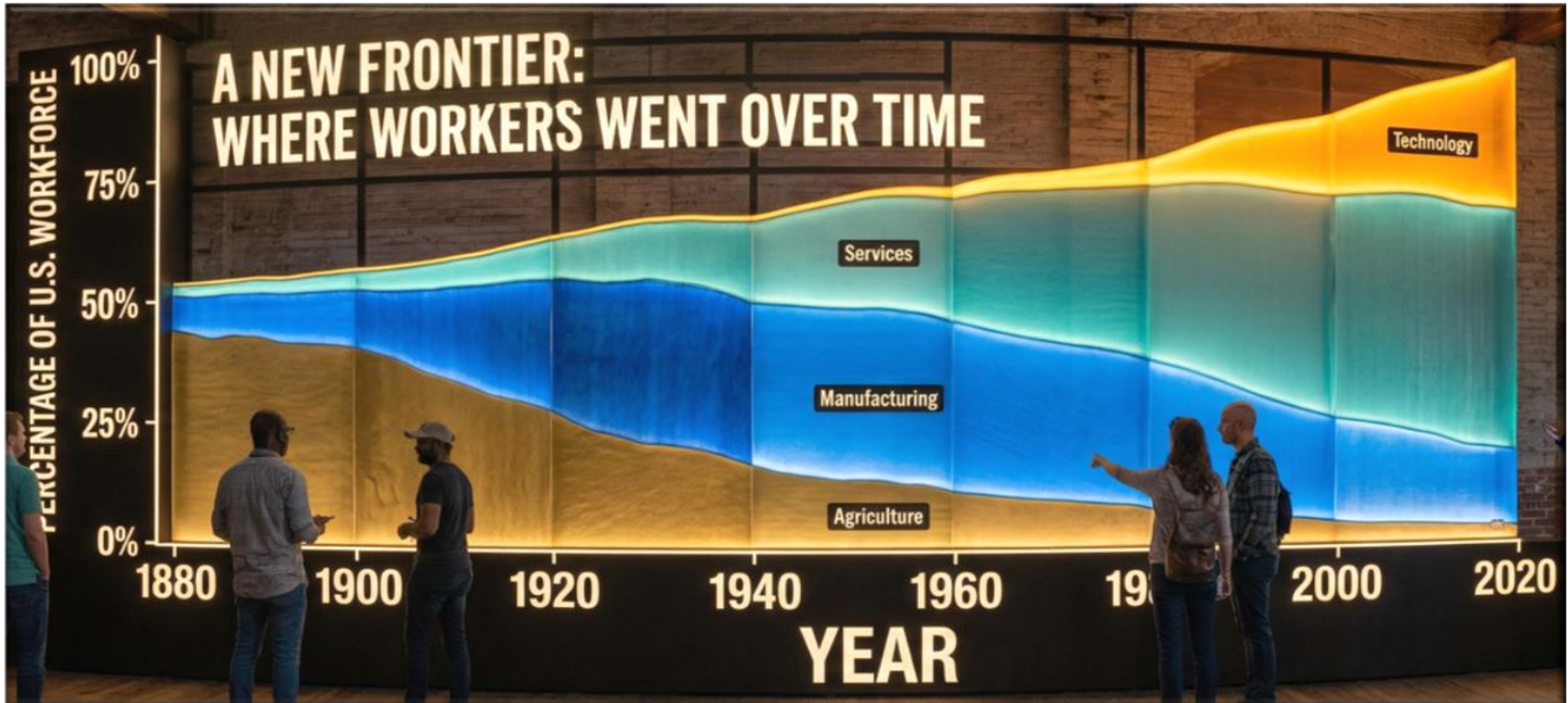
# Predictions are Hard — Especially About the Future

## Occupational popularity (& necessity) ebbs & flows over time.



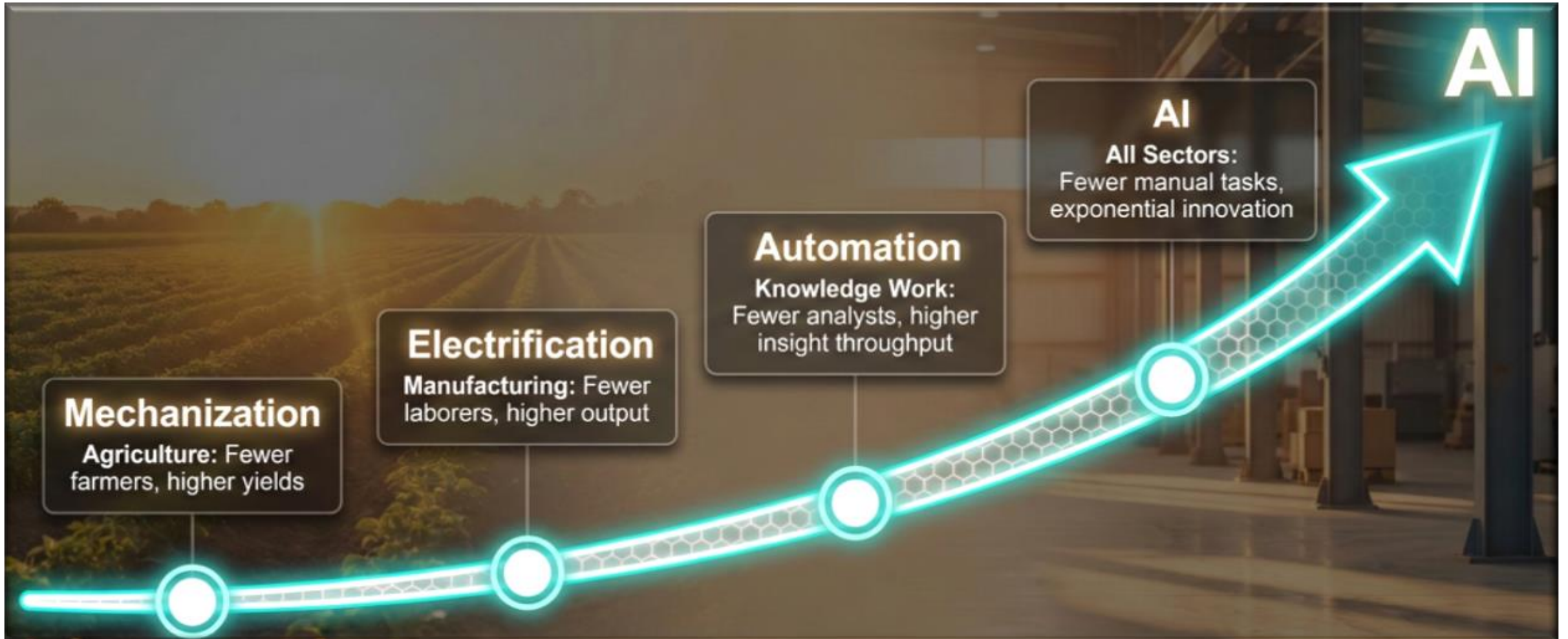
# Predictions are Hard — Especially About the Future

Labor shifted across sectors over time, not entirely out of the economy.



# Predictions are Hard — Especially About the Future

Generative AI & automation are doing for knowledge work what mechanization did to agriculture & electrification did to manufacturing.



# Predictions are Hard — Especially About the Future

There's no end to gloom & doom about our AI-augmented future

## There's a Damn Good Chance AI Will Destroy Humanity, Researchers Say in a New Study

On the bright side, there are some things we can do to prevent that outcome



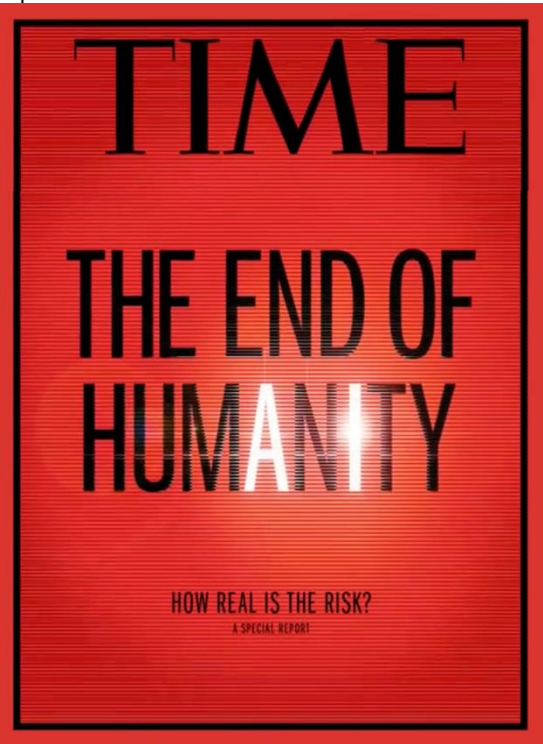
BY CAROLINE DELBERT PUBLISHED: OCT 14, 2022

SAVE ARTICLE



Is the AI apocalypse actually coming?  
What life could look like if robots take over

From job losses to mass extinction events, experts are warning that AI technology risks opening a Pandora's Box of horrors if left unchecked — are they right to be sounding the klaxon? Katie Strick reports



## Should We Stop Developing AI For The Good Of Humanity?

See [www.google.com/search?q=is+AI+the+end+of+the+world](http://www.google.com/search?q=is+AI+the+end+of+the+world)

# Predictions are Hard — Especially About the Future

However, all hope is not lost!



*The “Jevons Paradox” predicts increased efficiency in software-reliant systems will ultimately yield greater need for workers due to expanded growth in market demand*

# **The Impact on Higher Education from Student Exposure to AI**

# The Impact on Higher Education from Student Exposure to AI

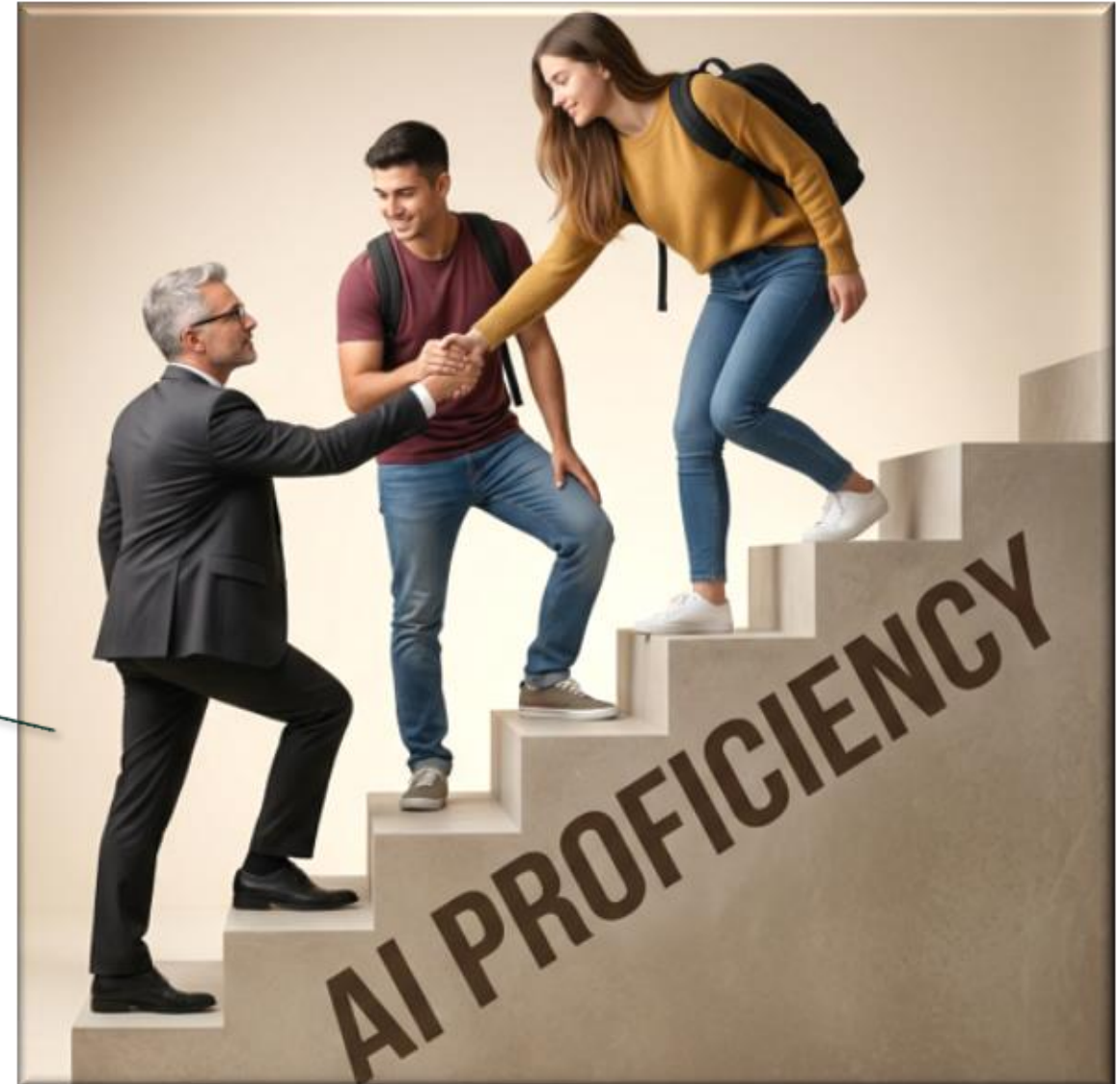
**A growing number of students are arriving at W&M already exposed to – & often well-versed in – powerful AI tools.**



# The Impact on Higher Education from Student Exposure to AI

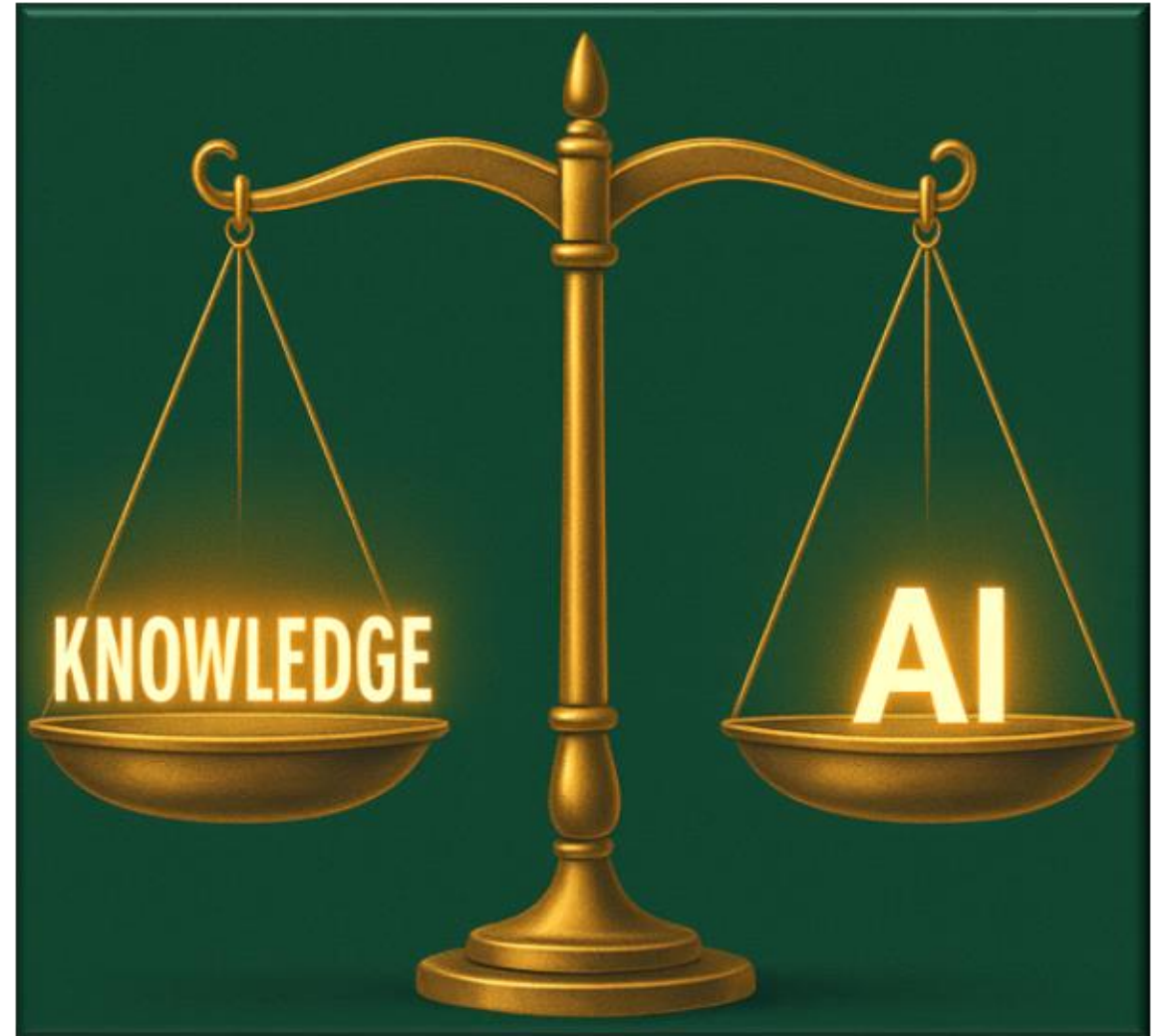
A growing number of students are arriving at W&M already exposed to – & often well-versed in – powerful AI tools.

*Some students are already more proficient in AI than their professors!*



# The Impact on Higher Education from Student Exposure to AI

It's essential we give all our students the opportunity to cultivate fluency in both knowledge & AI.



# The Impact on Higher Education from Student Exposure to AI

It's essential we give all our students the opportunity to cultivate fluency in both knowledge & AI.

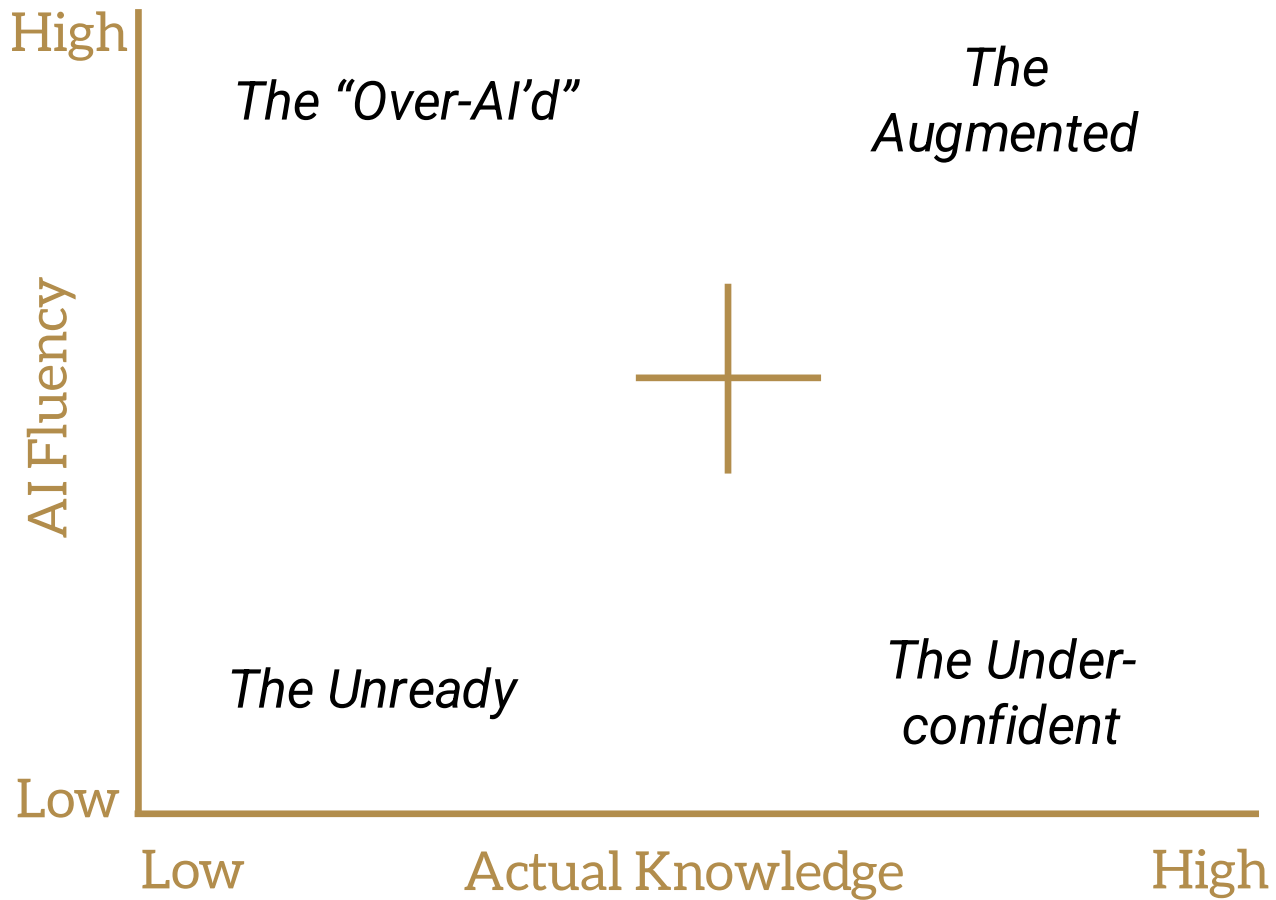
*In a world that's increasingly shaped by algorithms & automation, success comes from knowing when, why & how to wield AI responsibly with integrity & purpose.*



# From Unready to Augmented: the Spectrum of Student Readiness

**X-axis:** 'Actual Knowledge' measures what students genuinely learned during K-12.

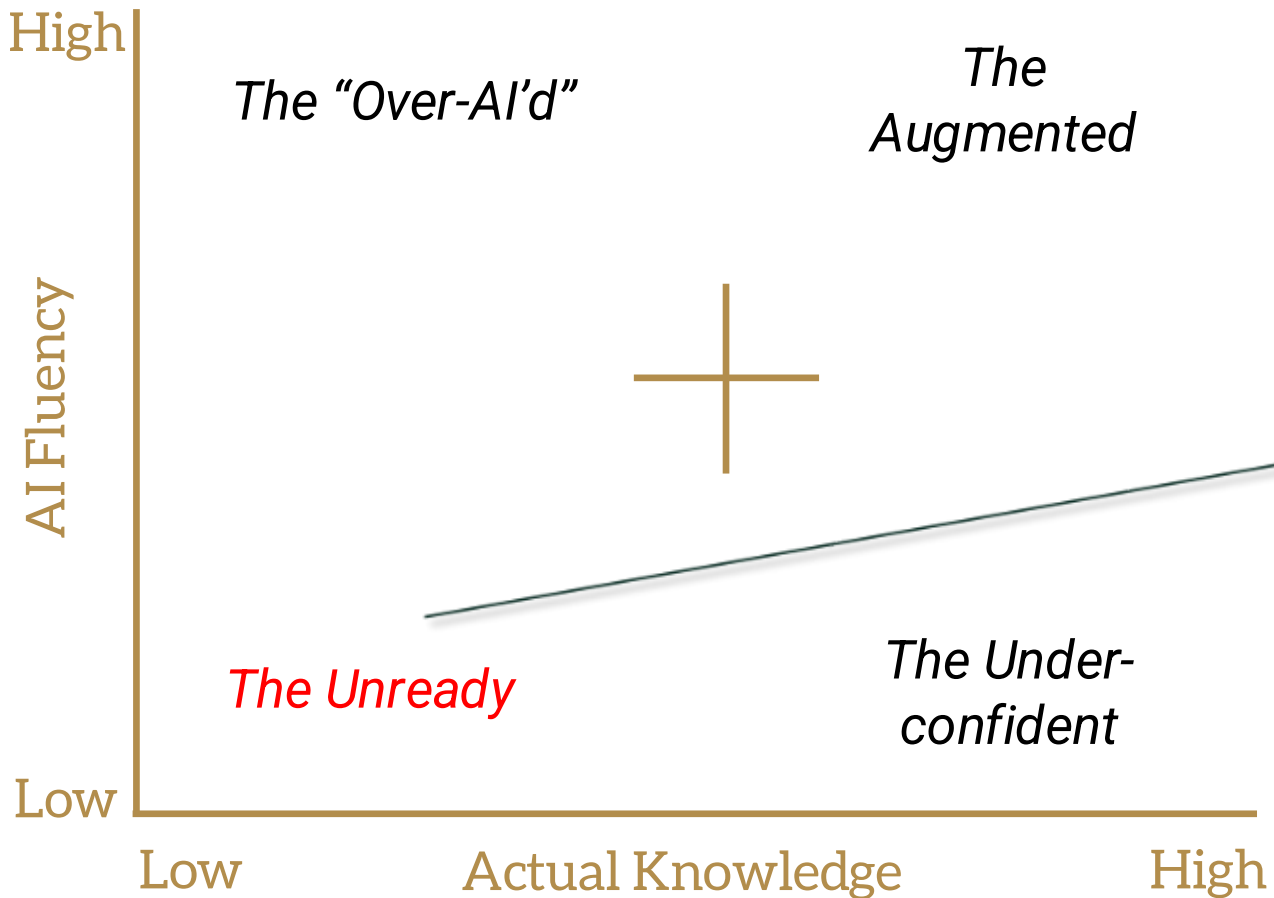
**Y-axis:** 'AI Fluency' measures their ability to show their understanding via AI tools.



# From Unready to Augmented: the Spectrum of Student Readiness

**X-axis:** 'Actual Knowledge' measures what students genuinely learned during K-12.

**Y-axis:** 'AI Fluency' measures their ability to show their understanding via AI tools.

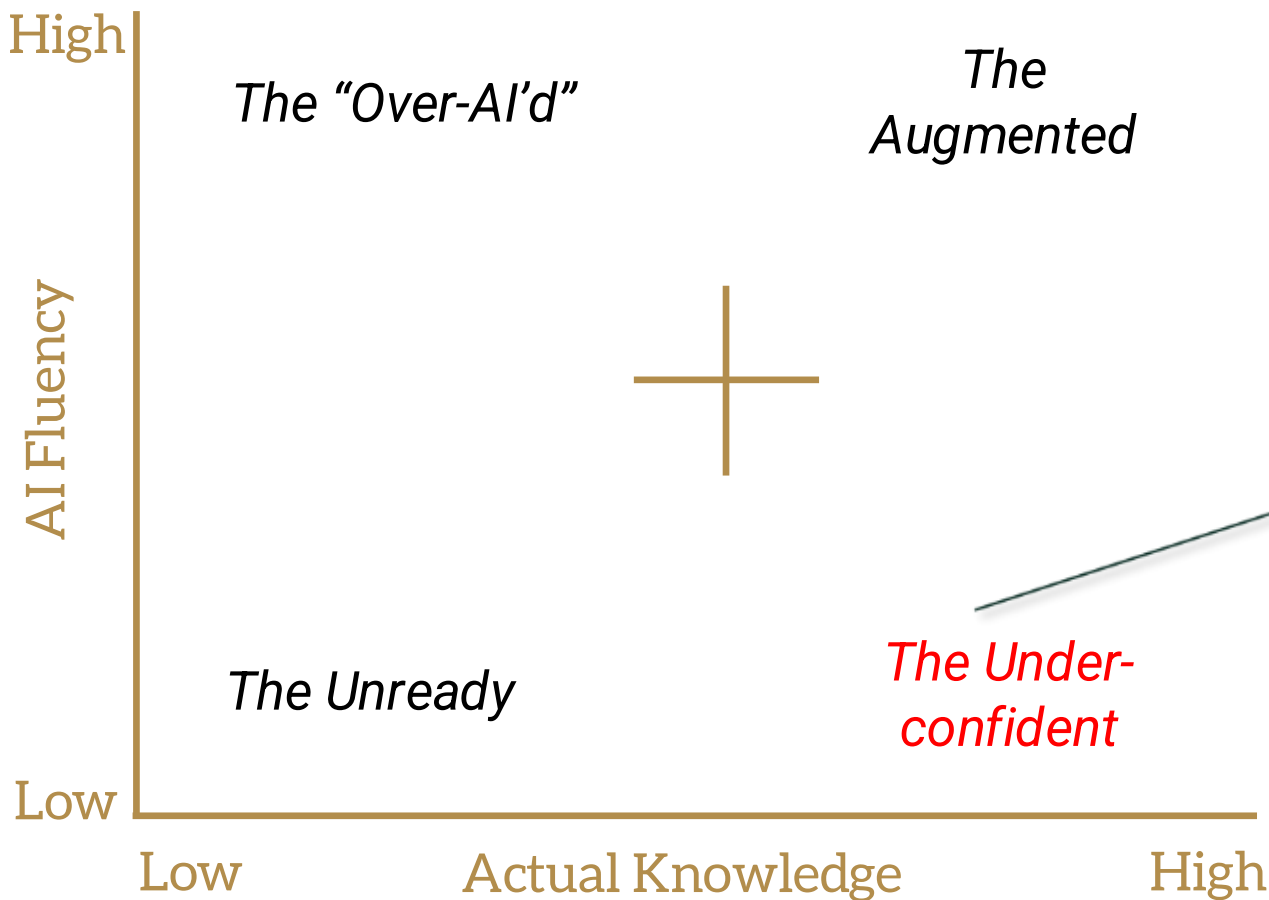


- Low actual knowledge, low AI Fluency** → These students have limited foundational learning & little-or-no skills using generative AI.
- **Likely characteristics:** Struggled in K-12, underexposed to AI, lack confidence.
  - **Risk:** They'll get left behind unless institutions actively scaffold both core knowledge & AI literacy skills.
  - **Intervention strategy:** Intensive foundational support + digital fluency bootcamps.

# From Unready to Augmented: the Spectrum of Student Readiness

**X-axis:** 'Actual Knowledge' measures what students genuinely learned during K-12.

**Y-axis:** 'AI Fluency' measures their ability to show their understanding via AI tools.



**High actual knowledge, low AI Fluency** → Students have learned well but haven't yet mastered—or trusted—AI tools

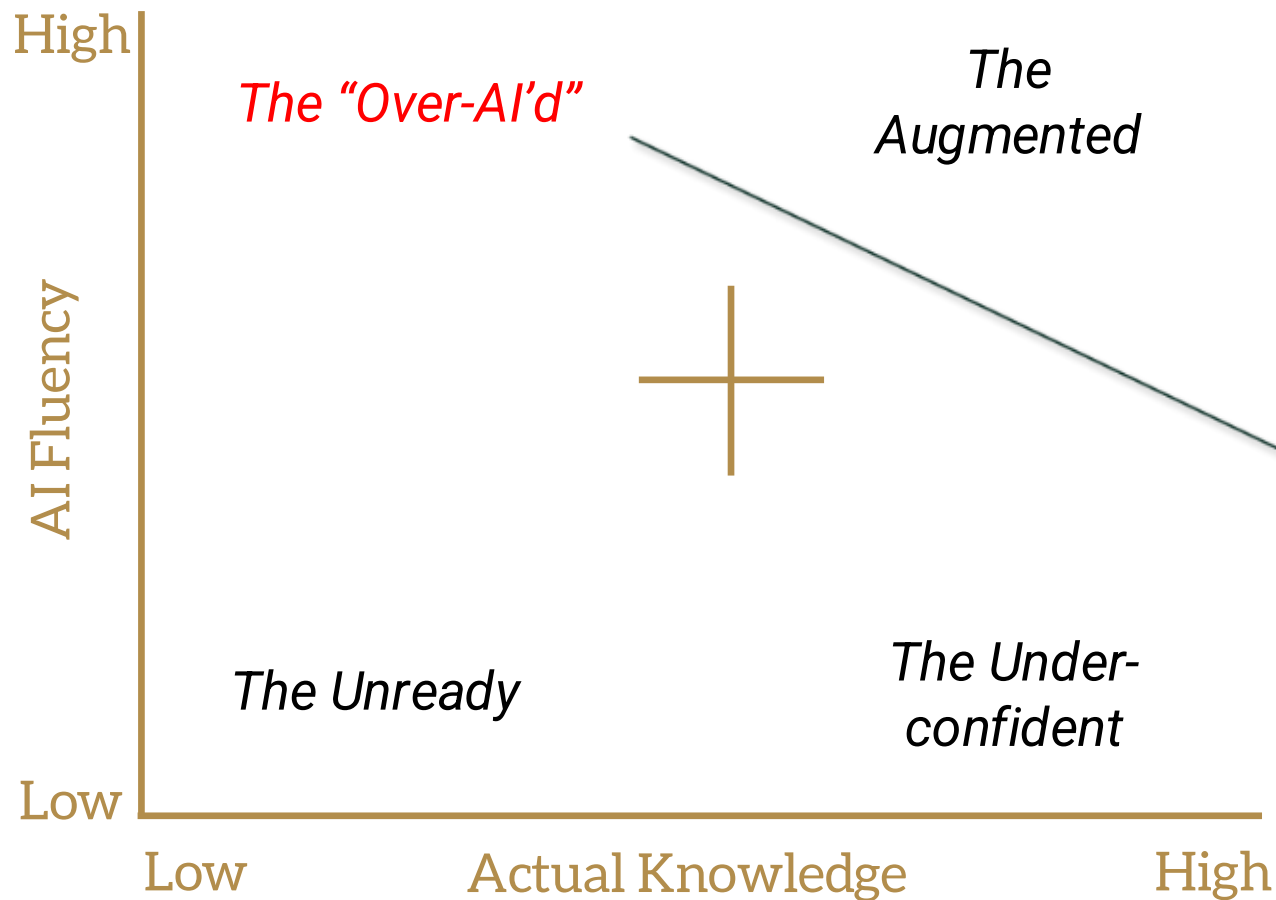
- **Likely characteristics:** Strong traditional learners, cautious adopters.
- **Risk:** They miss opportunities to scale their skills & output.
- **Intervention strategy:** Low-stakes AI experimentation, pair work with AI-native peers.

Helping these students is a key goal of the School of Computing, Data Sciences & Physics.

# From Unready to Augmented: the Spectrum of Student Readiness

**X-axis:** 'Actual Knowledge' measures what students genuinely learned during K-12.

**Y-axis:** 'AI Fluency' measures their ability to show their understanding via AI tools.



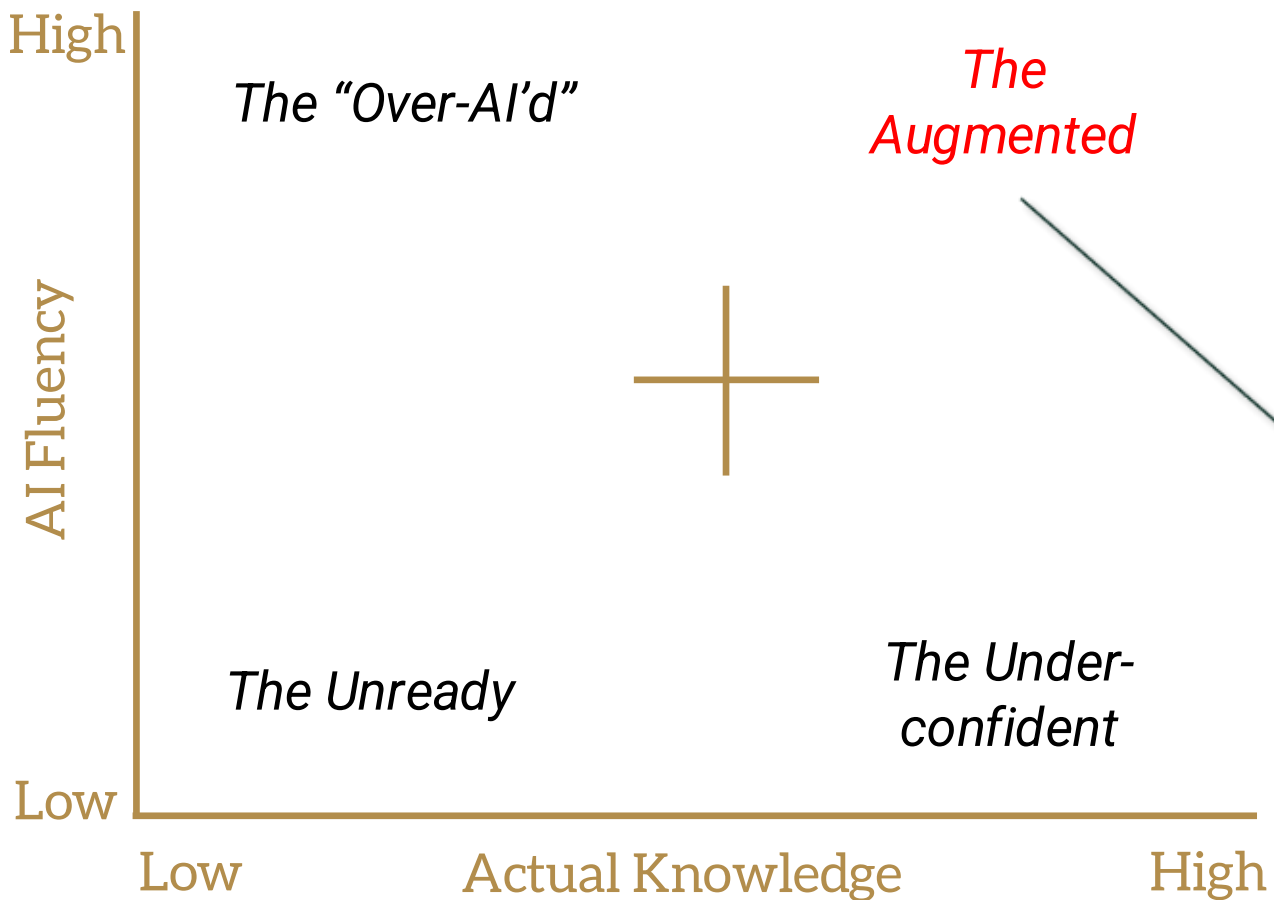
- Low actual knowledge, high AI Fluency** → These students use AI tools impressively but have shaky foundational understanding.
- **Likely characteristics:** Learned to “prompt well” without deeply learning content.
  - **Risk:** They appear competent — until pushed into open-ended, novel or adversarial tasks.
  - **Intervention strategy:** Focus on analytical reasoning, interpretive depth & Socratic inquiry.

**The College of Arts & Sciences plays an indispensable role in rebalancing the Over-AI'd!**

# From Unready to Augmented: the Spectrum of Student Readiness

**X-axis:** 'Actual Knowledge' measures what students genuinely learned during K-12.

**Y-axis:** 'AI Fluency' measures their ability to show their understanding via AI tools.



- High actual knowledge, high AI Fluency** → These students amplify their robust foundational knowledge with AI.
- **Likely characteristics:** Solid K-12 foundation, strong curiosity, reflective AI users.
  - **Risk:** These future-ready leaders are ready to shape the AI-human interface.
  - **Intervention strategy:** Challenge them with ethical dilemmas, multi-modal creation & design experiences & systems thinking.

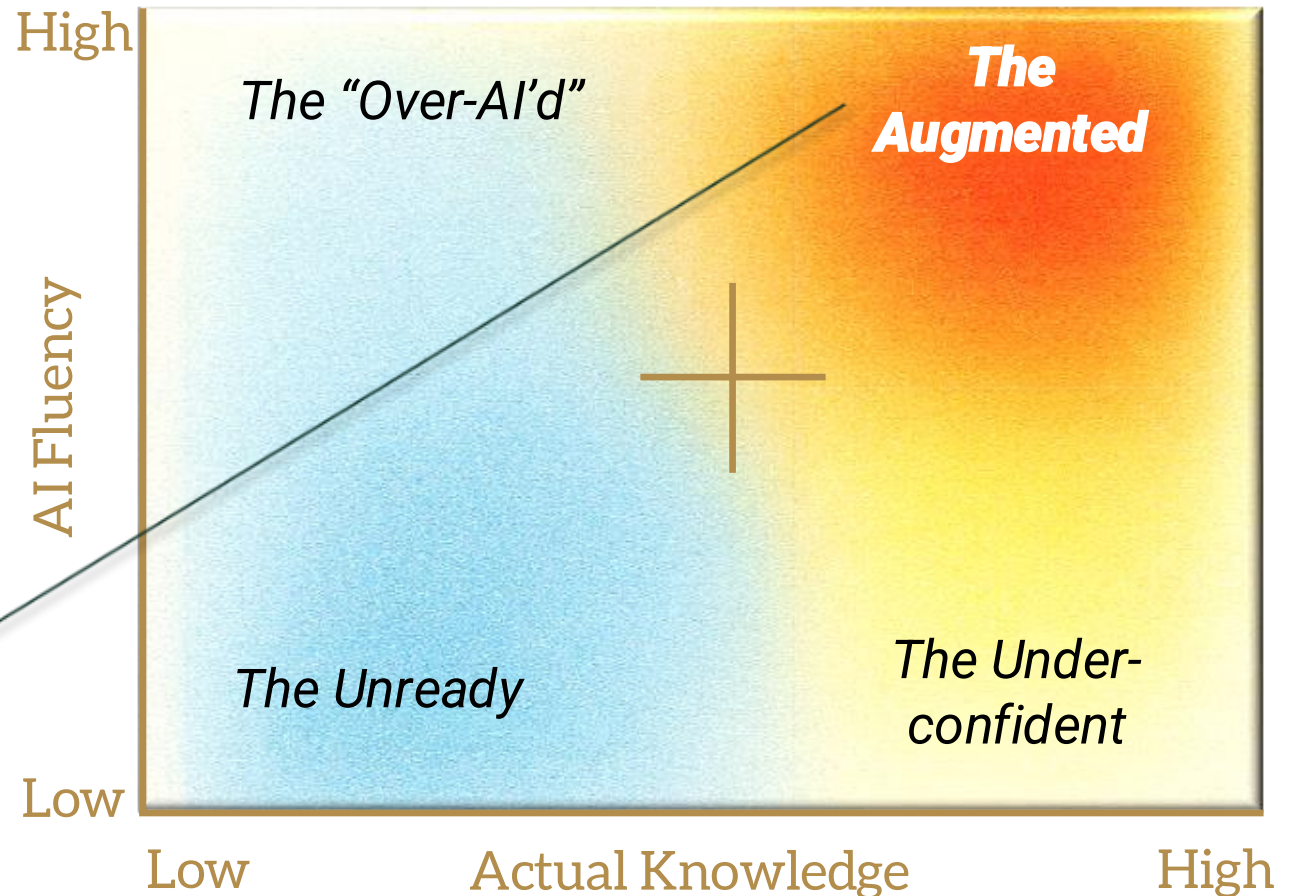
# From Learning to Leadership: Building the AI-Savvy Generation

Our goal as educators is clear:  
Support every student in becoming  
part of the AI-savvy generation.



# From Learning to Leadership: Building the AI-Savvy Generation

Our goal as educators is clear:  
Support every student in becoming  
part of the AI-savvy generation.



*Our mission – & opportunity –  
at W&M & CDSP is to ensure that every  
student has an opportunity to progress  
into the 'Augmented' quadrant.*

# From Learning to Leadership: Building the AI-Savvy Generation

Our goal as educators is clear:  
Support every student in becoming  
part of the AI-savvy generation.

*Integrating foundational knowledge  
together with sophisticated AI skills  
enables our students not just to  
face the future, but to shape it.*



**How We are Preparing  
Our Students to Succeed  
& Lead with AI**

# How We're Preparing Our Students to Succeed & Lead with AI

Should everyone still learn to code?

- Probably – but not for the same reasons or in the same way.

*The essence of programming & problem-solving remains, but the medium is shifting to dialogue & design thinking.*



# How We're Preparing Our Students to Succeed & Lead with AI

## Should everyone still learn to code?

- Probably — but not for the same reasons or in the same way.
- The type of “coding” to learn depends on the degree of proficiency that students & professionals need.



See: [en.wikipedia.org/wiki/Maslow's\\_hierarchy\\_of\\_needs](https://en.wikipedia.org/wiki/Maslow's_hierarchy_of_needs)

# How We're Preparing Our Students to Succeed & Lead with AI

## Should everyone still learn to code?

- Probably — but not for the same reasons or in the same way.
- The type of “coding” to learn depends on the degree of proficiency that students & professionals need.



AI literacy is not only technical — it's civic, ethical, & deeply human.

# How We're Preparing Our Students to Succeed & Lead with AI

## Should everyone still learn to code?

- Probably — but not for the same reasons or in the same way.
- The type of “coding” to learn depends on the degree of proficiency that students & professionals need.

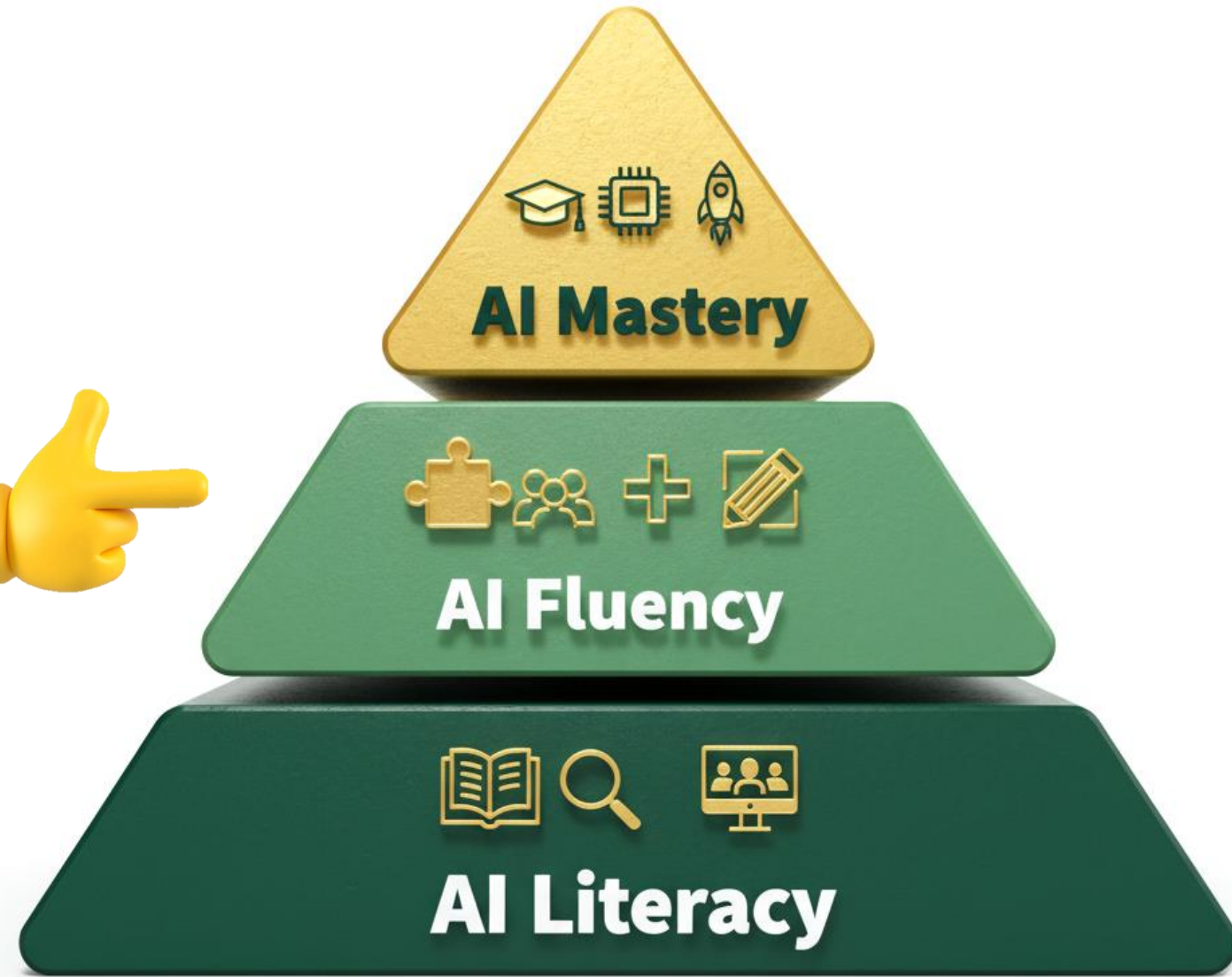


AI mastery demands deep expertise in programming, systems architecture, & validation.

# How We're Preparing Our Students to Succeed & Lead with AI

## Should everyone still learn to code?

- Probably — but not for the same reasons or in the same way.
- The type of “coding” to learn depends on the degree of proficiency that students & professionals need.



AI fluency speaks the language of intelligence to extend human reach, imagination & capability.

# How We're Preparing Our Students to Succeed & Lead with AI

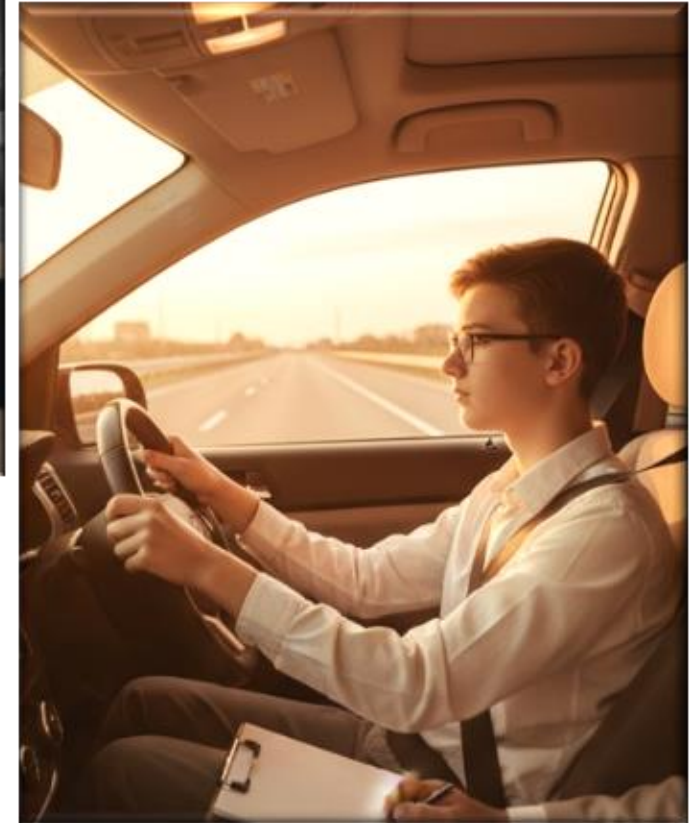
If we want students to collaborate with AI safely, we must teach them how to do this confidently.



# How We're Preparing Our Students to Succeed & Lead with AI

If we want students to collaborate with AI safely, we must teach them how to do this confidently.

*Much more time is spent teaching students to drive safely than to use AI safely.*



# How We're Preparing Our Students to Succeed & Lead with AI

If we want students to collaborate with AI safely, we must teach them how to do this confidently.

## SCHOOL CURRICULUM

### DRIVER'S ED

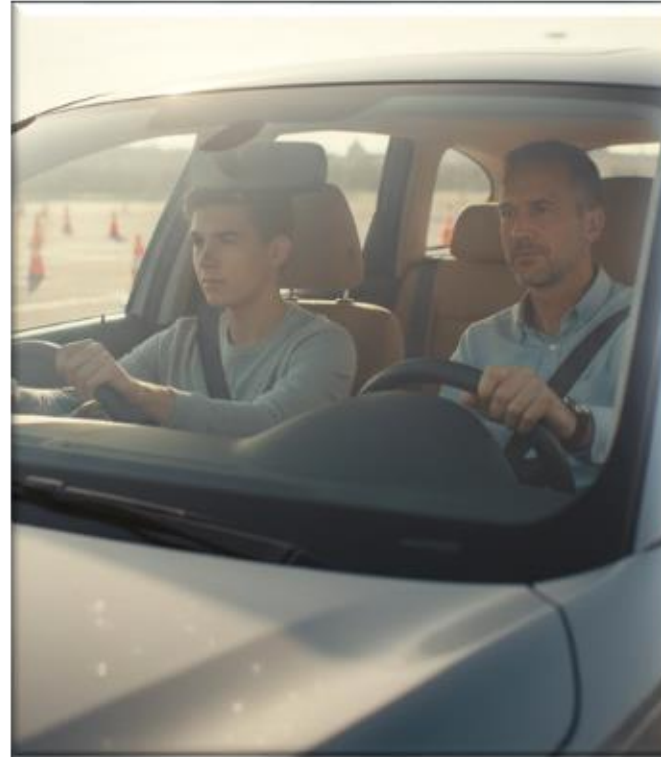
- 40 HOURS CLASSROOM
- 100 HOURS BEHIND-THE-WHEEL
- CERTIFIED INSTRUCTOR

### AI ED

- 5 MINUTES "DON'T CHEAT ON HOMEWORK"
- FROM TEACHER WHO'S NEVER USED IT



***Supervised Learning***

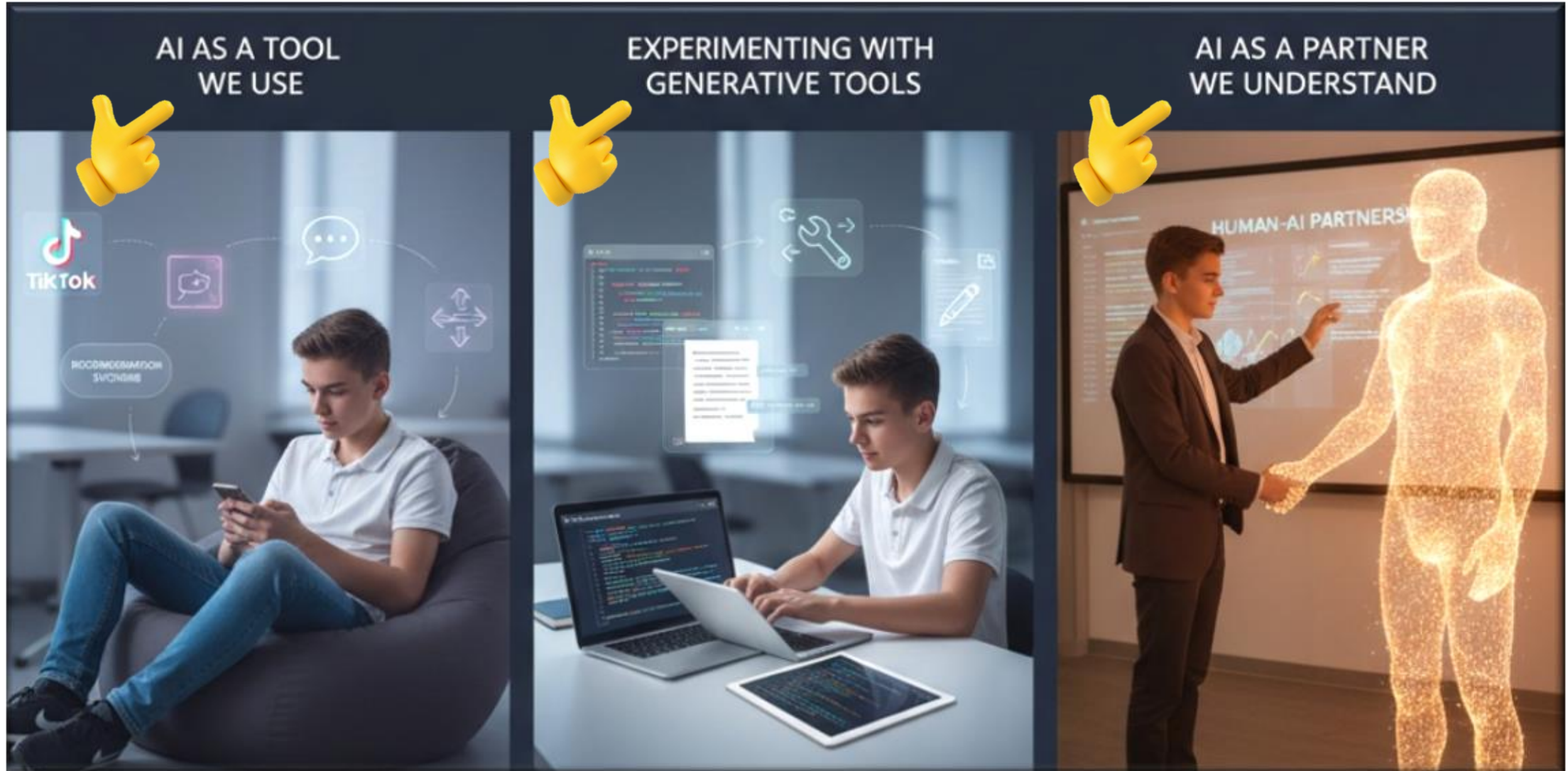


***Unsupervised Learning***



# How We're Preparing Our Students to Succeed & Lead with AI

Many of our students already use AI. We're now teaching them to use it wisely.



# How We're Preparing Our Students to Succeed & Lead with AI

Our efforts with human-centered AI at W&M are bearing fruit!

*"It should come as no surprise that the New Ivies are leaders in AI adoption, given their focus on workforce preparation."*

## THE NEW IVIES: PUBLIC

### William & Mary

**Location:** Williamsburg, Virginia

**Undergraduate Enrollment:** 7,465

**Acceptance Rate:** 34%

**Median SAT Score:** 1470

**Median ACT Score:** 33

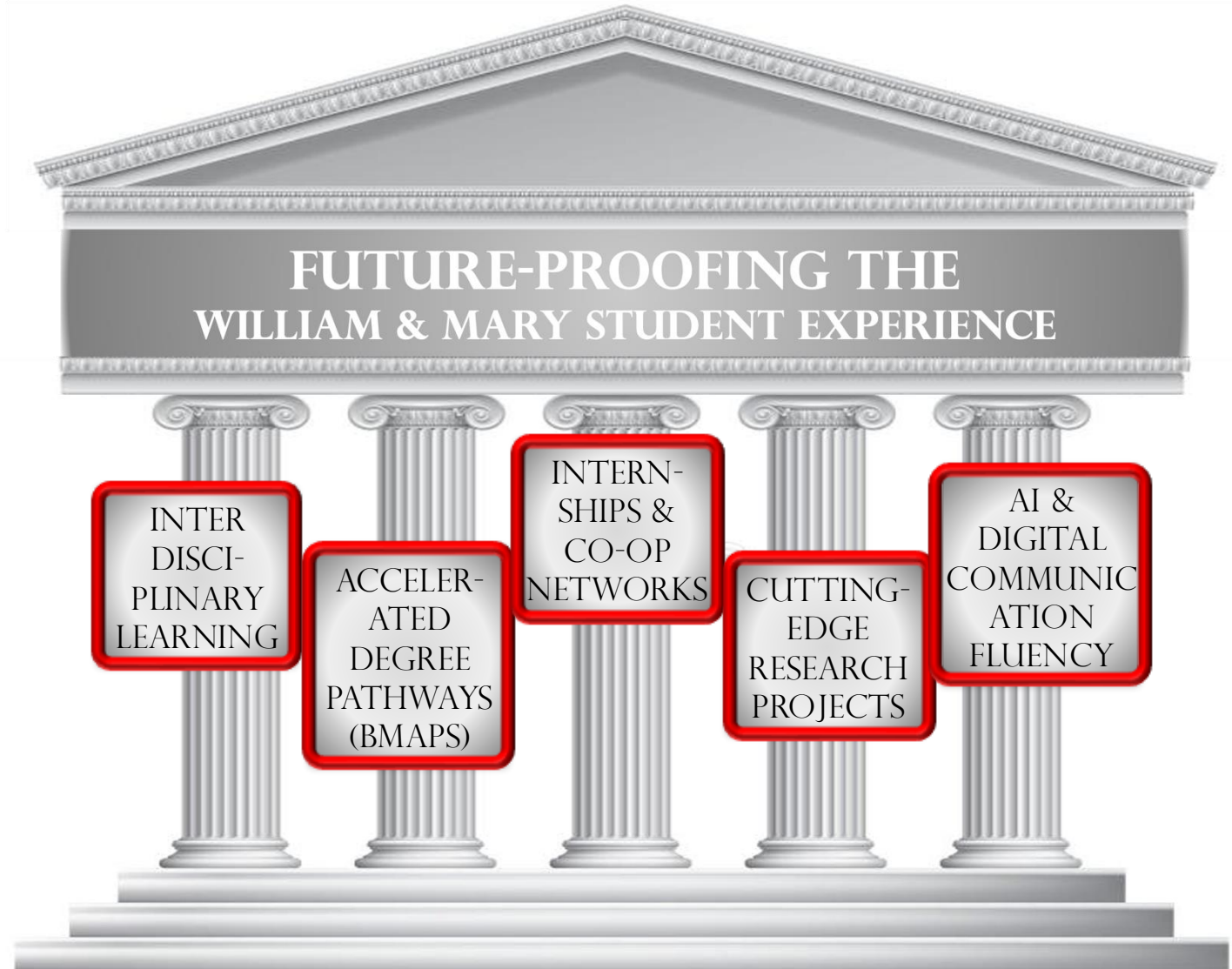


*"Each of the 20 outstanding institutions on this list reports that AI fluency has become a critical learning outcome."*

**Preparing Students for  
Career Success in a Rapidly  
Changing World**

# Preparing Students for Career Success in a Rapidly Changing World

William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.

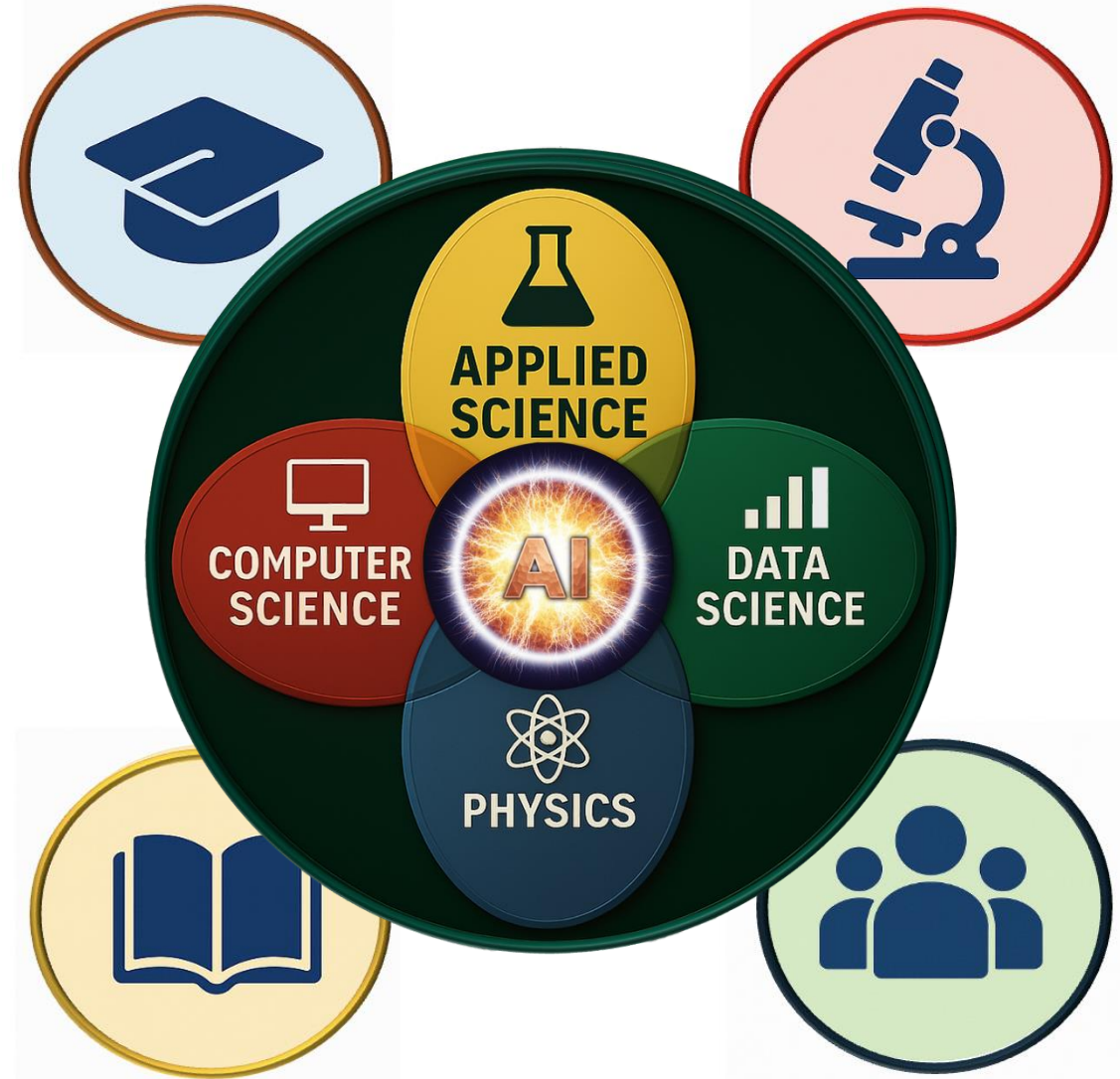


See [youtu.be/1JEFY1oU0Ho](https://youtu.be/1JEFY1oU0Ho) for more information about our "future-proofing" strategies.

# Preparing Students for Career Success in a Rapidly Changing World

William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.

1. Interdisciplinary learning & degrees.

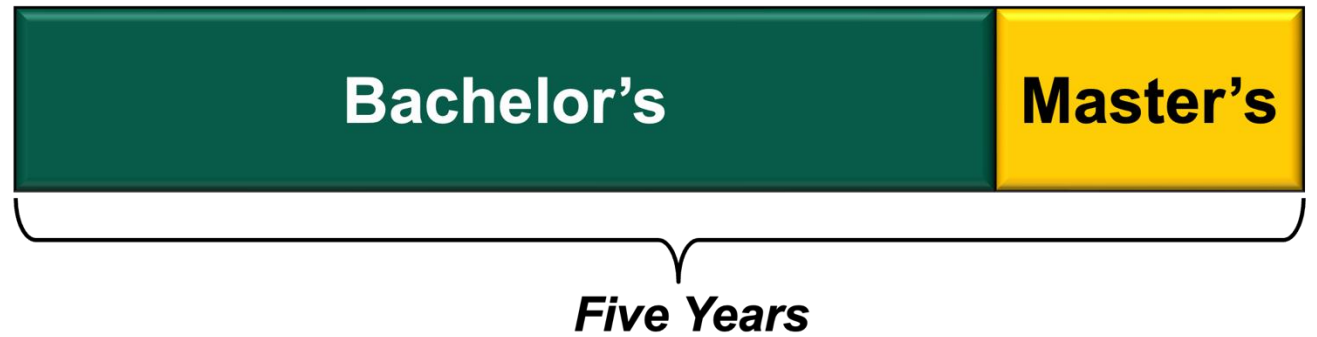


# Preparing Students for Career Success in a Rapidly Changing World

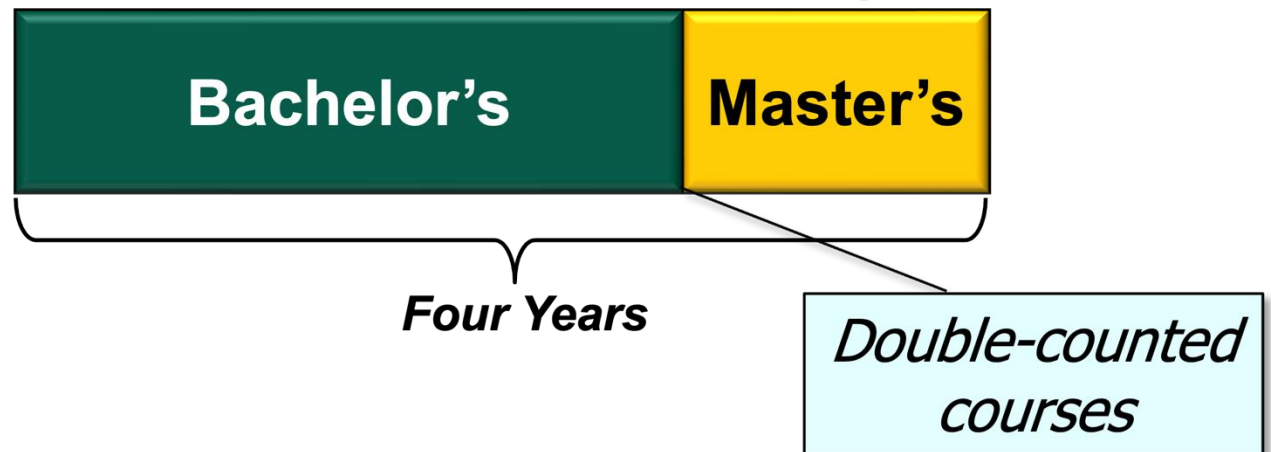
William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.

1. Interdisciplinary learning & degrees.
2. Bachelors-to-masters accelerated pathways.

## Traditional Pathway



## Bachelors-to-Master's Accelerated Pathway



# Preparing Students for Career Success in a Rapidly Changing World

**William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.**

1. Interdisciplinary learning & degrees.
2. Bachelors-to-masters accelerated pathways.
3. Internships & co-ops.



# Preparing Students for Career Success in a Rapidly Changing World

**William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.**

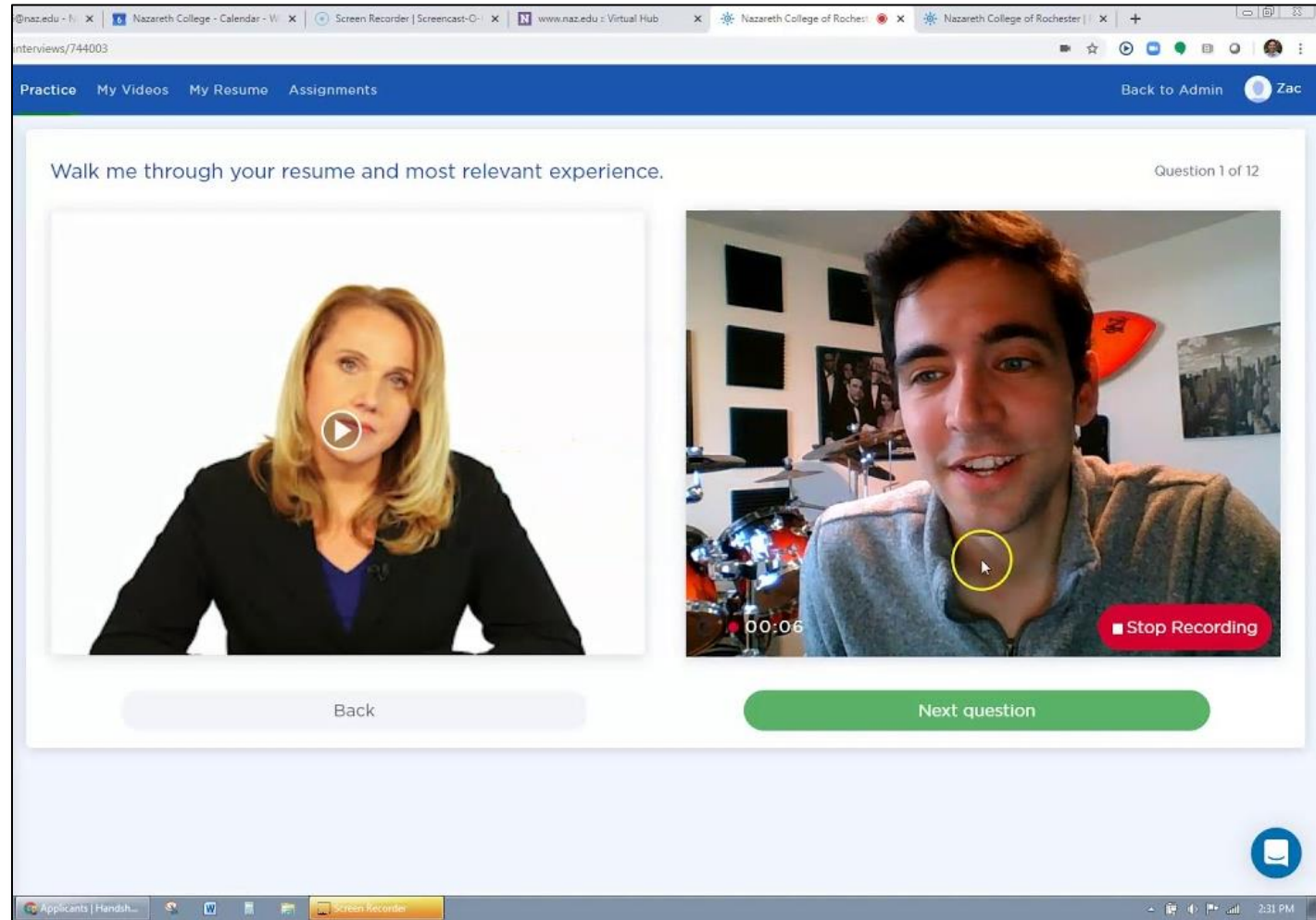
1. Interdisciplinary learning & degrees.
2. Bachelors-to-masters accelerated pathways.
3. Internships & co-ops.
4. Undergraduate research.



# Preparing Students for Career Success in a Rapidly Changing World

**William & Mary's School of Computing, Data Sciences & Physics is devising strategies to "future-proof" our graduates.**

1. Interdisciplinary learning & degrees.
2. Bachelors-to-masters accelerated pathways.
3. Internships & co-ops.
4. Undergraduate research.
5. Digital communication skills.



See: [www.biginterview.com/higher-education](http://www.biginterview.com/higher-education)

# Preparing Students for Career Success in a Rapidly Changing World

All five pillars serve one mission: To help our students move faster up the learning curve & thrive in a hybrid human-AI workforce.



# Wrapping Up & Looking Ahead

# Wrapping Up & Looking Ahead

Technological innovations over the past 2,400 years with biggest impact:

1. Writing (~750 BCE)
2. Printing press (15th Century)
3. Steam engine (18th Century)
4. Electricity (19th Century)
5. Digital Revolution: computers & the internet/web (20th Century)
6. **Generative AI (21st Century)**



**SURFING  
THE AI WAVE**  
A HUMAN-CENTERED APPROACH TO INNOVATION AND ETHICS  
WITH DEAN DOUG SCHMIDT

See [youtu.be/j6NZNscdbFE](https://youtu.be/j6NZNscdbFE) for my Tack Lecture video on “human-centered augmented intelligence”

# Wrapping Up & Looking Ahead

Technological innovations over the past 2,400 years with biggest impact:

1. Writing (~750 BCE)
2. Printing press (15th Century)
3. Steam engine (18th Century)
4. Electricity (19th Century)
5. Digital Revolution: computers & the internet/web (20th Century)
6. **Generative AI (21st Century)**

*We're living at a pivotal time & helping to shape the future of technology, social & economic evolution, so enjoy!*



See [www.youtube.com/watch?v=uWbybukpdCU](https://www.youtube.com/watch?v=uWbybukpdCU) for the “Time of Your Life” video!

# Wrapping Up & Looking Ahead

We must be sensitive to the forthcoming “digital chasm.”



See: [fortune.com/2023/04/25/artificial-intelligence-ai-replace-humans-prompt-engineers-chatgpt](https://fortune.com/2023/04/25/artificial-intelligence-ai-replace-humans-prompt-engineers-chatgpt)

# Wrapping Up & Looking Ahead

**Generative AI provides a unique opportunity to level the playing field.**



**Very few people have more than 1-2 years of experience with generative AI!**

# Wrapping Up & Looking Ahead

There are many freely available online resources.





 Vanderbilt University

**Generative AI for Leaders**

**Skills you'll gain:** Succession Planning, Business Writing, Generative AI, Leadership, Meeting Facilitation, Organizational Leadership, Strateg...

★ 4.8 · 4.9K reviews  
Beginner · Course · 1 - 4 Weeks





 Vanderbilt University

**Advanced Prompt Engineering for Everyone**

**Skills you'll gain:** Prompt Engineering, Generative AI, ChatGPT, Large Language Modeling, Artificial Intelligence, Data Quality

★ 4.8 · 306 reviews  
Intermediate · Course · 1 - 3 Months

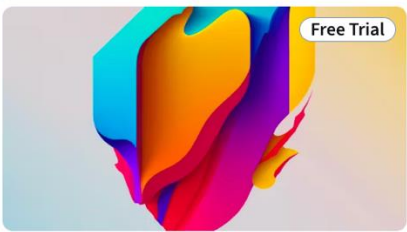



 Vanderbilt University

**Prompt Engineering**

**Skills you'll gain:** Prompt Engineering, ChatGPT, Ideation, Verification And Validation, Data Validation, Data Presentation, Productivity,...

★ 4.8 · 6.8K reviews  
Beginner · Specialization · 1 - 3 Months





 Vanderbilt University

**Prompt Engineering for ChatGPT**

**Skills you'll gain:** Prompt Engineering, ChatGPT, Productivity, Generative AI, Artificial Intelligence, Large Language Modeling, Creative Thinking,...

★ 4.8 · 6K reviews  
Beginner · Course · 1 - 3 Months





 Vanderbilt University

**Change Management for Generative AI**

**Skills you'll gain:** Change Management, Organizational Change, Business Transformation, Generative AI, Workforce Development,...

★ 4.8 · 620 reviews  
Beginner · Specialization · 1 - 4 Weeks



 Vanderbilt University

**Prompt Engineering for Educators**

**Skills you'll gain:** Prompt Engineering, ChatGPT, Productivity, Creative Problem-Solving, Generative AI, AI Personalization, Data Synthes...

★ 4.8 · 6.6K reviews  
Beginner · Specialization · 1 - 3 Months

See: [www.coursera.org/search?query=prompt%20engineering%20jules%20white](https://www.coursera.org/search?query=prompt%20engineering%20jules%20white)

# Wrapping Up & Looking Ahead

Evidence indicates that AI benefits novices more than experts.

## Generative AI at Work

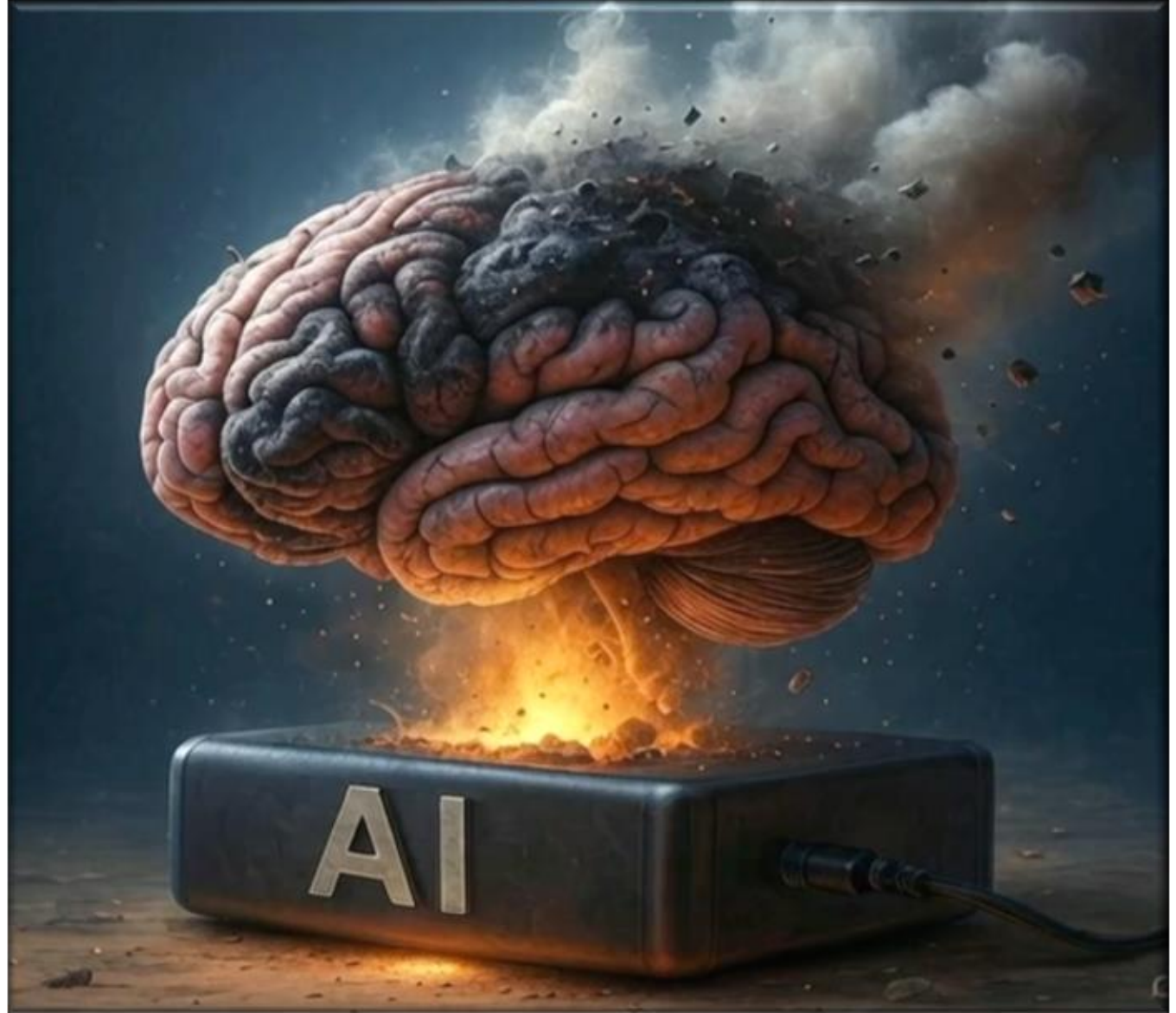
**Erik Brynjolfsson, Danielle Li & Lindsey R. Raymond**

New AI tools have the potential to change the way workers perform & learn, but little is known about their impacts on the job. In this paper, we study the staggered introduction of a generative AI-based conversational assistant using data from 5,179 customer support agents. Access to the tool increases productivity, as measured by issues resolved per hour, by 14% on average, including a 34% improvement for novice & low-skilled workers but with minimal impact on experienced & highly skilled workers. We provide suggestive evidence that the AI model disseminates the best practices of more able workers & helps newer workers move down the experience curve. We also find that AI assistance improves customer sentiment, increases employee retention, & may lead to worker learning. Our results suggest that access to generative AI can increase productivity, with large heterogeneity in effects across workers.

See: [www.nber.org/papers/w31161](https://www.nber.org/papers/w31161)

## Wrapping Up & Looking Ahead

However, critical thinking & intellectual rigor are still required to avoid “brain-rot” & skills erosion!



See: [arxiv.org/abs/2506.08872](https://arxiv.org/abs/2506.08872)

# Many More of My Gen AI Videos Are Available on YouTube

YouTube <sup>CL</sup>

Search, Create, 9+, Profile

**Douglas Schmidt**  
@DouglasSchmidt · 24.8K subscribers · 3.3K videos  
The videos in this channel are based on lecture: ...more

Customize channel Manage videos

Home Videos Live **Playlists** Posts >

**Future-Proofing Graduates from the School of Computing, Data Sciences & Physics**  
Douglas C. Schmidt  
Dean of Computing, Data Sciences & Physics  
Professor of Computer Science

**Generative Augmented Intelligence (AI+) ...**  
by Douglas Schmidt  
Playlist · Public · 71 videos · 2,033 views

This playlist contains video presentations I've given either by myself or with my colleagues at Vanderbilt related to ...more

Play all

Sort All Videos Shorts

- Future-Proofing Graduates from the School of Computing, Data Sciences & Physics**  
Douglas Schmidt · 278 views · 2 months ago
- New School Vision & Priorities**  
Douglas Schmidt · 276 views · 2 months ago
- The Future of Software Development & Engineering Resulting from Exposure to AI**  
Douglas Schmidt · 383 views · 3 months ago
- The Future of Higher Education Resulting from Exposure to AI**  
Douglas Schmidt · 220 views · 3 months ago

**Unbinding Prometheus: How Generative AI is Liberating Computational Thinking from Coding (Part 1 of 8)**  
Douglas C. Schmidt  
Dean of Computing, Data Sciences & Physics

**Computational Thinking**  
by Douglas Schmidt  
Playlist · Public · 8 videos · 93 views

This playlist contains a series of 8 related videos from a talk I gave at the University of Illinois, Chicago de... more

Play all

Sort All Videos Shorts

- Unbinding Prometheus: How Generative AI is Liberating Computational Thinking from Coding (1 of 8)**  
Douglas Schmidt · 88 views · 2 weeks ago
- Unbinding Prometheus: How Generative AI is Liberating Computational Thinking from Coding (2 of 8)**  
Douglas Schmidt · 35 views · 2 weeks ago
- Unbinding Prometheus: How Generative AI is Liberating Computational Thinking from Coding (3 of 8)**  
Douglas Schmidt · 28 views · 2 weeks ago
- Unbinding Prometheus: How Generative AI is Liberating Computational Thinking from Coding (4 of 8)**  
Douglas Schmidt · 18 views · 2 weeks ago

Watch on YouTube: [www.youtube.com/c/DouglasSchmidt](https://www.youtube.com/c/DouglasSchmidt)

# End of Navigating Our AI-Augmented Future