AI for Everyone

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Youth STEAM Initiative

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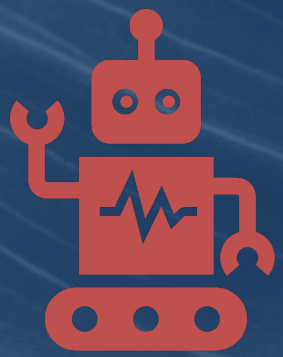
"Understanding both the opportunities and hazards of AI enables everyone to contribute to its informed, equitable, and ethical integration into society, maximizing benefits while managing risks….

The Paul English Applied AI Institute is instrumental in preparing our students and other members of the UMass Boston community for a world in which AI will inevitably continue to grow and shape industries and daily life."

— Wei Ding, Paul English Applied AI Institute Executive Director

In 2025, Prof. Ding received the IEEE Big Data Security Leadership Award for Outstanding Leadership and Technical Contributions in Big Data and Security both in Academia and Government. Prof. Ding is the only UMass Boston faculty member who has been elevated to the status of IEEE Fellow—a distinction awarded to select IEEE members for extraordinary accomplishments across IEEE's fields of interest. Her work in AI was recently featured in *UMass Boston Research* magazine in an article titled "Artificial Intelligence: Shaping the Future."

The Ground Beneath Us Is Moving



AI is no longer a visitor—it is happening.

A Humanistic Foundation

Responsible AI centers on:

- Transparency
- Verification
- Bias awareness
- Human oversight

Three Laws of AI

- Intelligence becomes a commodity
- Verifier's Law: AI excels where correctness is easy to check
- Jagged Edge: AI brilliant in some areas, not others

Citation: https://langcopilot.com/posts/2025-11-08-jason-weis-3-laws-ai-future

What Does “Commodity” Mean?

- Easy replaceable
- Widely available
- Low margin and low differentiation
- Interchangeable across suppliers

Examples

- An **orange** in a supermarket
- Salt
- Wheat
- Oil
- Generic memory chips
- Bulk electricity

Why This Matters to AI

- As AI gets cheaper and more accessible, many types of “intelligence” become like **oranges** — common, abundant, and inexpensive.
- Meaning: Basic analysis, Basic writing, Basic coding, Basic tutoring, Basic design
- These tasks become **commoditized** — anyone with AI can do them.

This shifts human value toward:

- Judgment
- Taste
- Ethics
- Creativity
- Leadership
- Complex problem-solving

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Verifier's Law

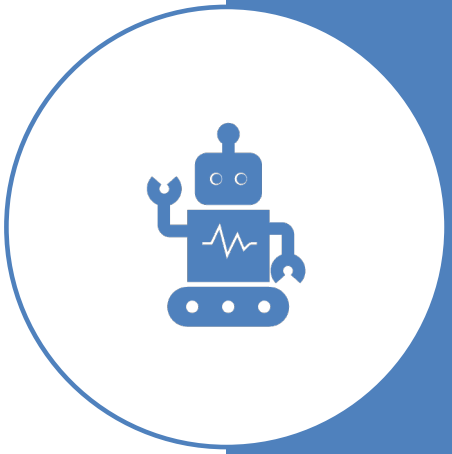
- **AI excels at tasks where correctness is easy, objective, and fast to verify.**

In simple terms:

- **If you can quickly check whether an answer is right, AI can eventually learn to do that task extremely well.**

Why?

Because AI improves through feedback.
If feedback is instant and clear, the AI can learn extremely fast.



The Core Insight

AI is not “smart” the way humans are.
It learns by trying something → getting rewarded or penalized → trying again.

So the key question is:

Can we easily tell whether the AI’s answer is right?

If *yes*: AI becomes superhuman quickly.
If *no*: AI progresses slowly.

Tasks Where AI Becomes Superhuman (Easy to Verify)

1. Coding

- Write function
- Run test suite
- Pass/fail is instant

This is why AI coding ability exploded.

2. Math

- Verify a proof
- Check a sum
- Run symbolic logic

Math is ideal for AI because correctness is crisp and exact.

Tasks Where AI Becomes Superhuman (Easy to Verify)

3. Games

Chess, Go, Sudoku

- Every move is validated by rules
- Win/loss is measurable

AI dominates these domains.

4. Fraud/spam detection

- Fraud happened or not
- Spam labeled or not

Clear signals → fast learning.

Tasks Where AI Struggles (Hard to Verify)

1. Writing a great personal statement

Is it “good”?
Depends on:

- Taste
- Culture
- Emotion
- Context

No ground truth → messy signal → slow improvement.

Tasks Where AI Struggles (Hard to Verify)

2. Counseling, therapy, emotional support

Correctness is subjective, human, relational.

3. Novel scientific discovery

We cannot immediately verify:

- Whether a hypothesis is true
- Whether an experiment works
- Whether a theory is valid

AI can generate ideas, but cannot reliably verify them.

AI wins where truth is cheap.

Humans win where truth is complicated.

What Matters for Education & Job

1. Anything easy to verify will be automated.

Coding, grading MCQs, summarization, data cleaning.

2. Human value shifts to hard-to-verify tasks.

- Leadership
- Empathy
- Mentorship
- Ethics
- Creativity with taste
- Ambiguous problem-solving

3. Students need to choose the right skills to grow.

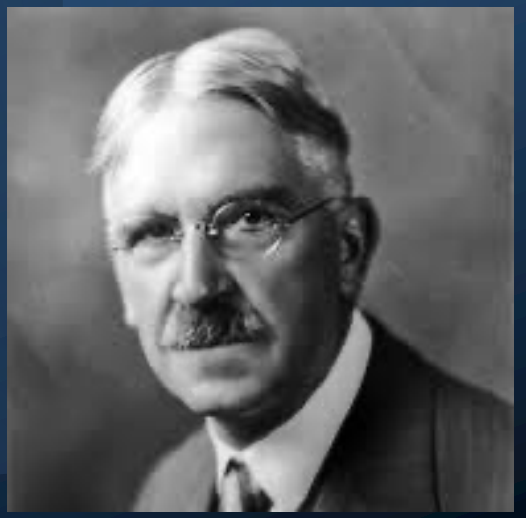
Teach them:
“Don’t compete with AI where AI has a structural advantage.”

What Students Need Today

Students request tools for:

- Research
- GenAI media
- Predictive analytics
- LLM access

Closing Reflection



Tools change, but the heart of education stays steady. John Dewey

Thank You

Questions?

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