AI and Actuarial Exams

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01 Stakeholders Involved

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Stakeholders

Actuarial Candidates

Individuals preparing for actuarial exams.

Actuarial Societies

Organizations setting standards and guidelines.

Exam Prep Providers

Entities offering resources and support for exam preparation.

02 Benefits of AI

Benefits to Candidates

24/7 Availability

Global Accessibility

Personalized Experience

Affordability

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Benefits to Actuarial Societies

Faster Grading

Enhanced Feedback

Write Exam Questions

Dynamic Exams
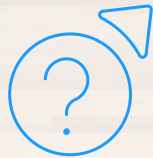
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Benefits to Prep Providers
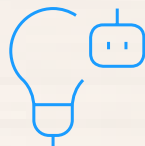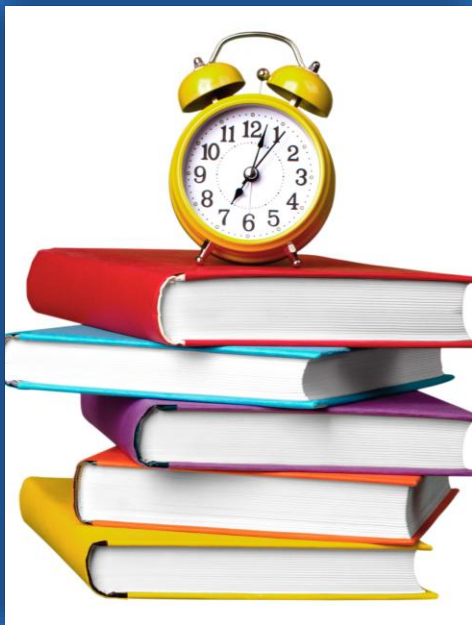
Innovative Study Methods

Cost Reductions

Faster Deployment

Curriculum Adaptability

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03 Challenges and Risks

Risks Introduced by AI

Potential for Cheating

- Ensures exams are closed book.
- Use AI detection software.
- Provide clear guidelines on AI use.

Overreliance on AI

- Apply critical thinking to AI output.
- Ensure exams are closed book.

Inequities

- Candidates who have access AI powered tools can have an unfair advantage.

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Addressing Other Challenges

Addressing Hallucinations

- Use the latest models.
- Use reasoning models for math.
- Provide relevant context in the prompt.
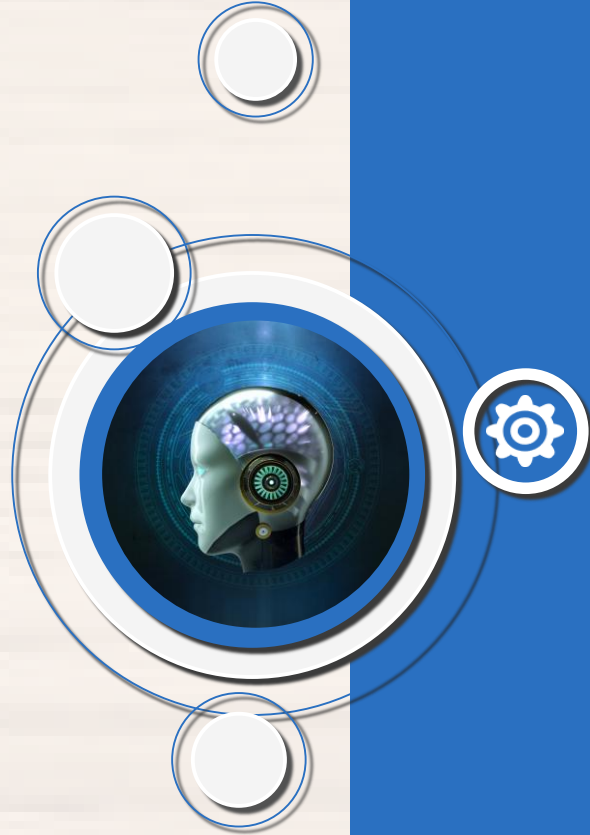- Cross reference with other materials or models.

Building Trust

- Understand that, just like humans, AI will not be 100% accurate.
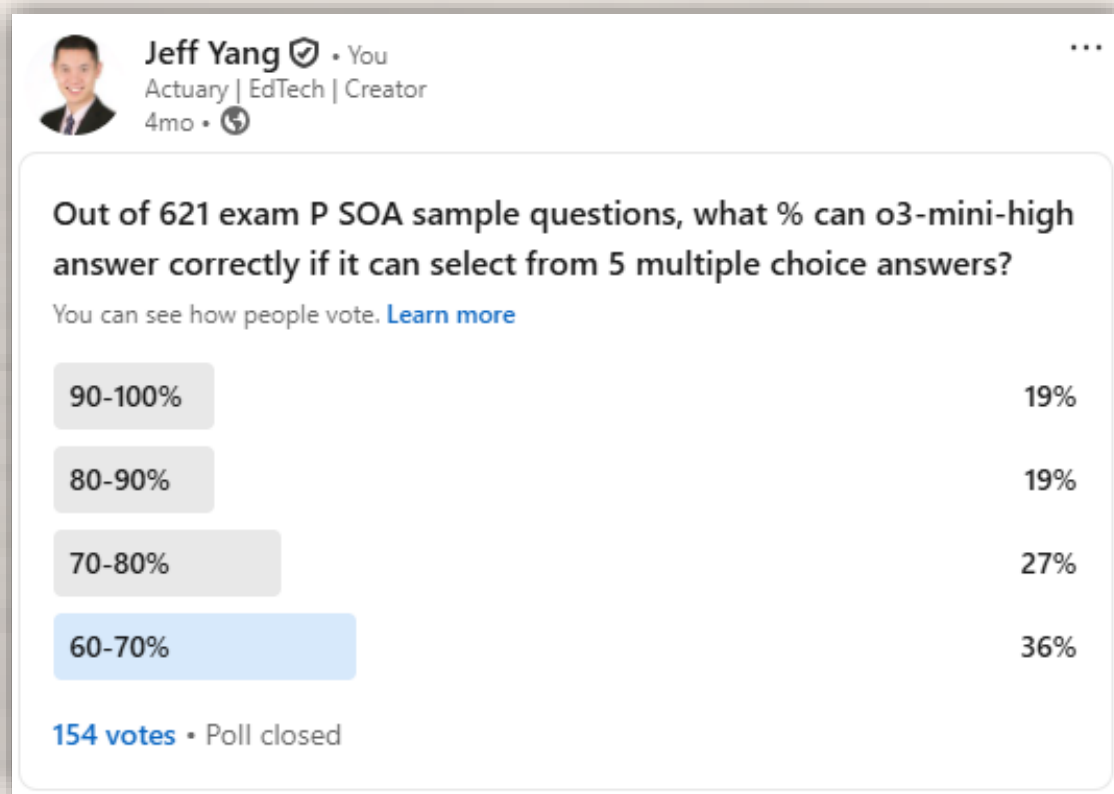- Get familiar with AI's strengths and limitations.

Adapting to Evolving Technology

- Stay updated with the latest AI advancements.

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04 Evolution of AI

Expectation

Jeff Yang ✓ · You
Actuary | EdTech | Creator
4mo · 🌐

Out of 621 exam P SOA sample questions, what % can o3-mini-high answer correctly if it can select from 5 multiple choice answers?

You can see how people vote. Learn more

90-100%	19%
80-90%	19%
70-80%	27%
60-70%	36%

154 votes · Poll closed

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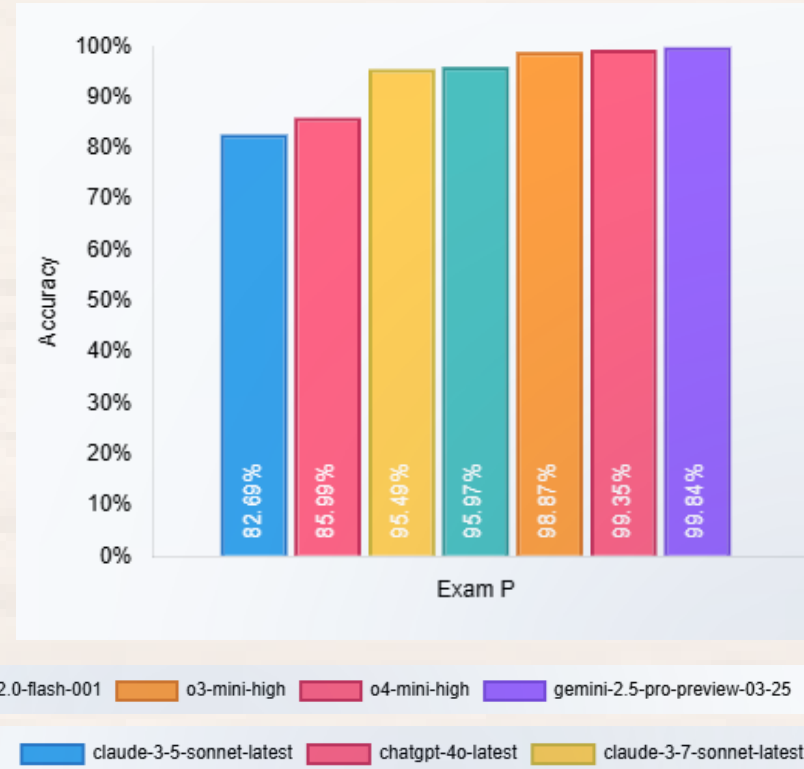
Expectation vs Reality

- <u>Discussion of results</u>
  - Expectation vs reality

- <u>Addressing concerns</u>
  - Are the models trained on the SOA sample questions?

- <u>Implications</u>
  - LLMs are increasingly capable of solving math questions

Source: https://www.theactuarialnexus.com/research/ai-benchmarks/summary

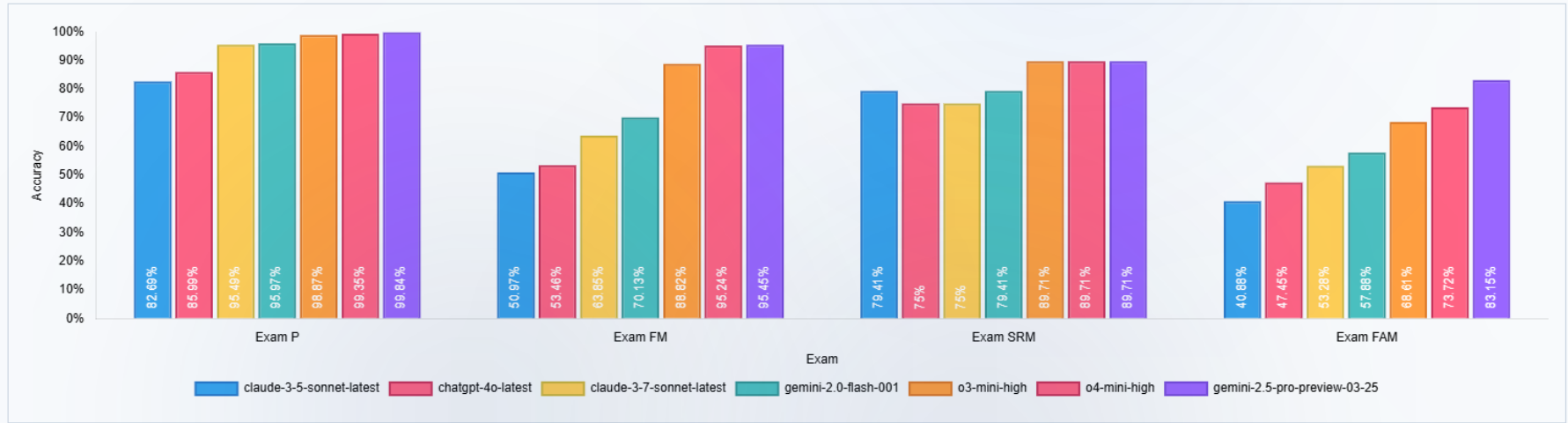Results based on models available 4/10/2025

Reasoning models include o3-mini-high, o4-mini-high, and gemini-2.5-pro-preview-03-25

Other Exams

AI Benchmarks
Summary
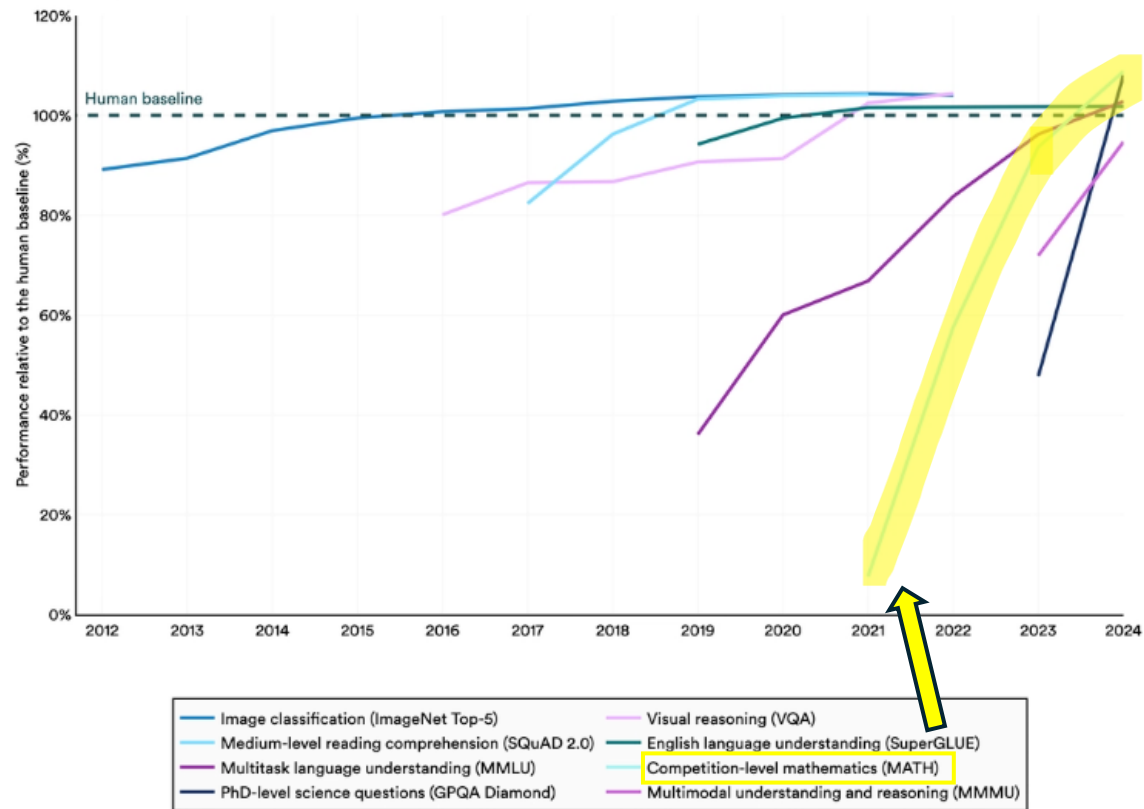All analysis is preliminary.

Source: https://www.theactuarialnexus.com/research/ai-benchmarks/summary
Results based on models available 4/10/2025
Reasoning models include o3-mini-high, o4-mini-high, and gemini-2.5-pro-preview-03-25

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Select AI Index technical performance benchmarks vs. human performance
Source: AI Index, 2025 | Chart: 2025 AI Index report

Legend:
- Image classification (ImageNet Top-5)
- Medium-level reading comprehension (SQuAD 2.0)
- Multitask language understanding (MMLU)
- PhD-level science questions (GPQA Diamond)
- Visual reasoning (VQA)
- English language understanding (SuperGLUE)
- Competition-level mathematics (MATH)
- Multimodal understanding and reasoning (MMMU)

Source: https://hai.stanford.edu/ai-index/2025-ai-index-report
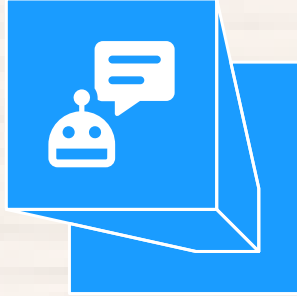
Other AI Improvements

- Enhancements in context windows, compute, speed, and cost

- Scaling -> reasoning models -> AI agents

- Developer tools accelerating development

05 Use Cases & Demo

AI Tools for Actuarial Exam Prep

Chatbots

AI Agents

Automated Grading (Demo)
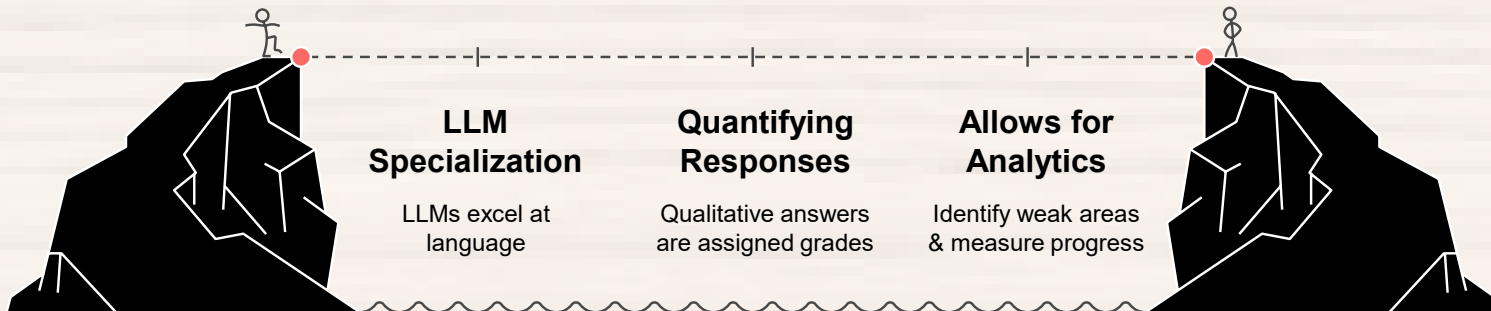
Dynamic Question Generation

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Automated Grading for Exam Prep

Manual Grading

Slow, costly, and limited

Automated Grading

Fast, cost-effective, and scalable

LLM Specialization

LLMs excel at language

Quantifying Responses

Qualitative answers are assigned grades

Allows for Analytics

Identify weak areas & measure progress

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Demo

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Thank you for watching

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