



BECOMING AN ACTUARY IN AN AI WORLD

**ACTUARY SOCIETY OF WCU
APRIL 23, 2026**

**PRESENTATION BY:
JOHN BUCHANAN, FCAS, MAAA
WCU '79**

Becoming an Actuary in an AI World



Becoming an Actuary in an AI World

Thursday 4/23/2026 9:30-10:30am



Goal: How can future actuaries combine strong actuarial fundamentals with AI fluency and independent critical thinking

Introduction - Professor Jiatian(Justin) Xu and Karter Rude

Icebreaker - WWBFD

Themes of presentation

1. **AI is here to stay** – redefining professional expectations
2. **Actuaries must learn the many uses of AI** - constantly refreshing their core learning
3. **AI reshapes how problems are framed and solved** – not just speed up work
4. **Actuaries must understand AI’s limitations** – hallucinations, false confidence, etc.
5. **Professional standards demand transparency** - stronger validation and documentation
6. **Future-ready professionals combine AI fluency with independent critical thinking**

Career Management

Q&A

Appendices

- A. Additional AI Back-up and Articles
- B. WWBFD – Cross-Discipline Foundation
- C. Career Management: Preparing to Enter the Actuarial Job Market
(courtesy Sally Ezra-recruiter EzraPenland)

AI CONTRIBUTION SCALE	
AI-0	Human Only
AI-1	Light Assist
AI-2	Moderate Assist
AI-3	Heavy Assist
AI-4	Mostly AI
AI-5	Fully AI + Human Co-Created

AI QUICK CHECK	
BEFORE YOU SUBMIT	
1. WRONG Is anything just incorrect?	<input type="checkbox"/> Facts real? <input type="checkbox"/> Names matched? <input type="checkbox"/> Sources support the claim? <input type="checkbox"/> Numbers / dates look right?
2. INCOMPLETE Is anything missing or weak?	<input type="checkbox"/> Covered everything asked? <input type="checkbox"/> Logic sound? <input type="checkbox"/> Balanced or one-sided? <input type="checkbox"/> Current and in the right context?
3. UNSTABLE Can you trust this version?	<input type="checkbox"/> Fix one thing → break another? <input type="checkbox"/> Output drifting or inconsistent? <input type="checkbox"/> Performance / time getting worse?
FINAL CHECK <input checked="" type="checkbox"/>	<input type="checkbox"/> Would I put my name on this?
AI CAN GET YOU TO 90%. YOU OWN THE LAST 10%.	
<small>AICS: Most student work = AI-0 to AI-4; AI-5 incl professional sign-off. (Requires human validation & refinement) (Rev. 04/23/2025)</small>	

My Bio – Generated from AI – A cautionary tale

Always Need to Double-Check Sources

Normally, a bio gets buried in the Appendix. I'm including this one here to emphasize that all parts of AI-generated results must be checked.

In this case almost all the information presented is correct. However, one seemingly well-sourced detail was completely wrong. Even one or two incorrect items can cast doubt on the entire output. To avoid more serious errors, any material assertion needs to be verified through a deliberate review process.

Further AI must be double-checked for thoroughness, not just correctness. AI is good at finding a needle in a haystack, but not at finding all the needles in a haystack. Current models tend to decide that they're done too quickly.

A full set of AI failure modes is described later (*Theme 4*), including combining into three buckets: when content is wrong, incomplete or unstable.

Copilot Search

John Buchanan – Climate Historian and Actuary

John Buchanan is a **credentialed actuary** by training, with a background in mathematics and statistics, who has also become an active **climate historian** through his work in education and outreach The D-Word. He is known for bridging historical climate data with modern environmental science, particularly through student-led research projects.

Climate Change and Historical Data Projects

Buchanan's most notable climate-related work is the **GLOBE-Franklin Climate Change Video** (2010), an 8-minute documentary that connects **colonial-era climate observations**—including those from historical figures like Ben Franklin—to contemporary climate data The D-Word. The project, part of the **GLOBE Student Climate Research Campaign**, encourages middle and high school students worldwide to analyze historical weather records and draw links to today's climate issues. The video was produced independently but later sponsored by major organizations such as **NOAA, NASA, UK Met, ACRE, Google UK, and GLOBE.gov** The D-Word+1.

The film highlights **Ralph Archbold**, the official "Ben Franklin" of Philadelphia, and uses a mix of history, Earth science, mathematics/statistics, and data visualization to inspire students to engage with climate truth IMDb. It was submitted to environmental categories at the Sundance Film Festival and other venues The D-Word.

Academic and Professional Background

Buchanan has led **international actuarial research collaborations**, including a US-UK working party producing a reference document on property insurance that won multiple actuarial awards The D-Word. He has also served as **chairperson of the Climate Change student outreach subcommittee** of the Casualty Actuarial Society (CAS) The D-Word.

Other Works

Beyond climate history, Buchanan is an author of military history books, including *The Road to Charleston* (2019) and *The Road to Valley Forge* (2004), which focus on the American Revolutionary War John Buchanan. He is also an amateur dancer and filmmaker, producing travel and cultural documentaries.

Impact

Through his climate projects, Buchanan has helped **democratize climate science education**, showing how historical data can be a valuable tool for understanding and addressing modern environmental challenges. His interdisciplinary approach—combining actuarial science, history, and STEM—makes him a distinctive figure in both professional and educational circles.

The D-Word
<https://www.d-word.com> › people › johnbuchanan

The D-Word: John buchanan

I have made a number of films in the last few years, with one I made as part of a volunteer middle and high school actuarial student outreach program on Climate Change, earning my first entry on IMDb.

YouTube
<https://www.youtube.com> › watch

John Buchanan GLOBE Colonial Era Climate Study - YouTube



Sep 1, 2010 · John Buchanan GLOBE Colonial Era Climate Study
<http://www.met-acre.org/data-projects-and-regional-chapters/us-colonial-era-case-study>
Author: GLOBE Implement... Views: 161

IMDb
<https://www.imdb.com> › title

Franklin's Climate Change (Video 2010) - IMDb

Franklin's Climate Change: Directed by John Buchanan. With Ralph Archbold. This entertaining 8 minute video, highlighting the 'real' Ben Franklin, describes a wide ranging climate change project involving ...
Actors: Ralph Archbold Director: John Buchanan

The D-Word
<https://www.d-word.com> › documentary

The D-Word: GLOBE-Franklin Climate Change Video - documentary film

This project centered around colonial era data collection with the corresponding video written and directed by John Buchanan to support the GLOBE organization's Student Climate Research Campaign ...



Becoming an Actuary in an AI World



Becoming an Actuary in an AI World

Presentation Themes – 4/23/2026

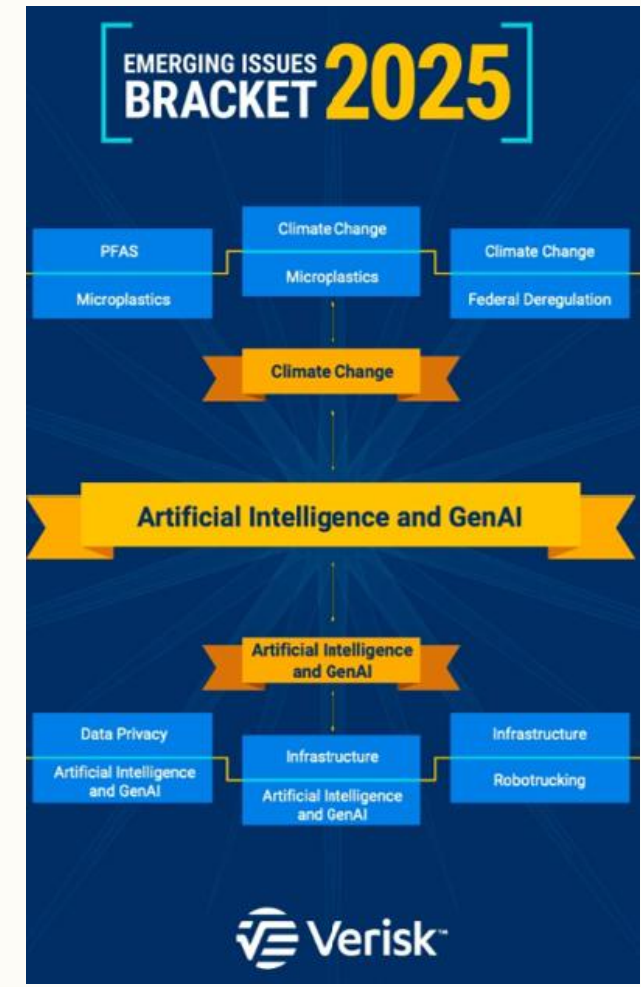
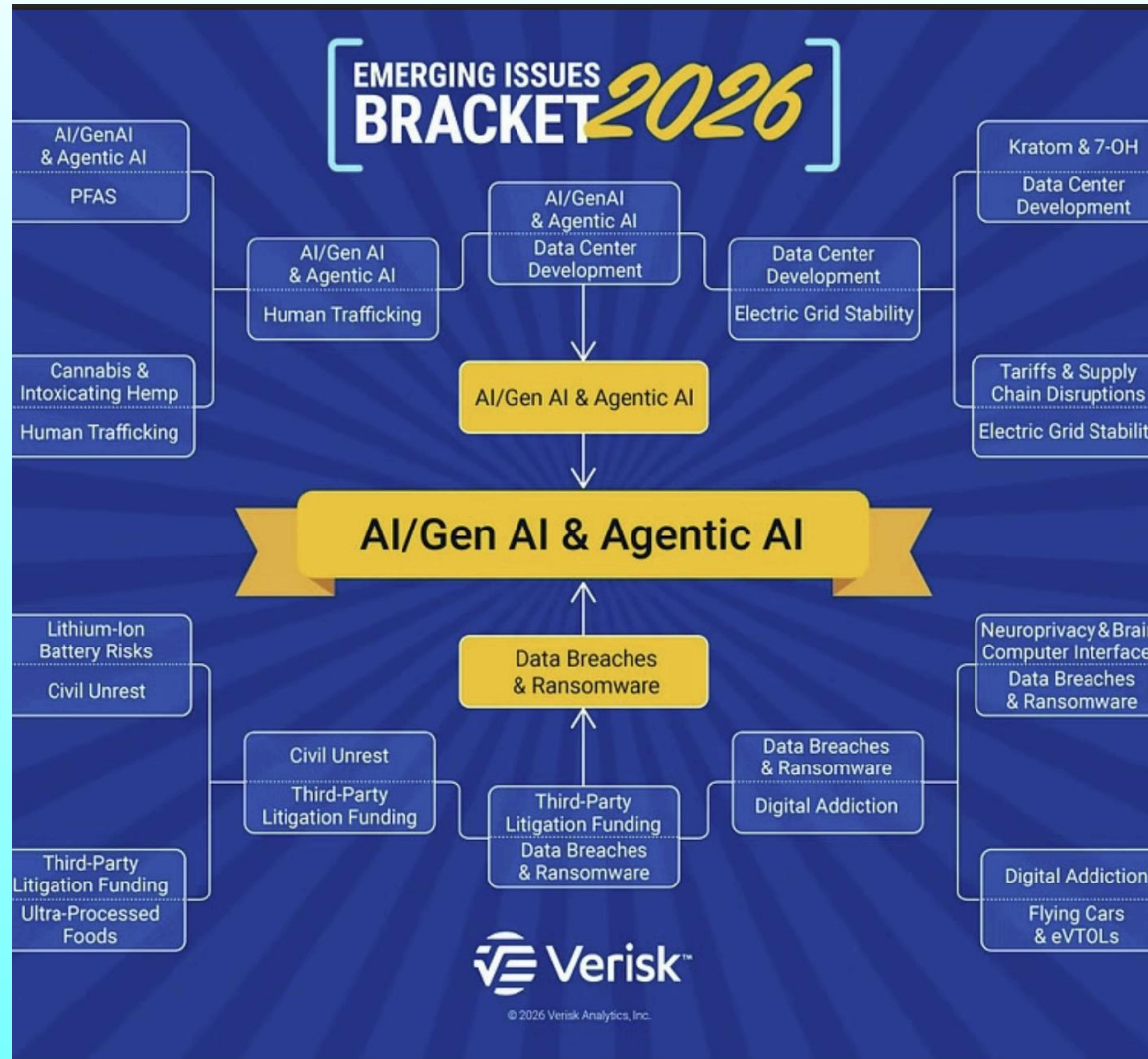
- 1. AI is here to stay – and it will redefine professional expectations**
Requires thoughtful implementation by educators, professional societies and the workforce
- 2. To stay relevant, actuaries must learn the many uses of AI and continuously refresh their core learning. Changes and applications will evolve rapidly.**
Need to establish core competencies first, before critically combining with AI
Retraining and cross-disciplinary education is necessary as AI transforms workflows
Skills that used to last 20 years, now last 5
- 3. AI doesn't just speed up work – it reshapes how problems are framed and solved**
Need to constantly fight the temptation of brains getting lazier
Must resist the temptation to outsource thinking
- 4. Actuaries must understand AI's limitations – hallucinations, false confidence, etc.**
"AI can be excellent at getting output to 90%, but surprisingly bad at getting to 100%"
"If you don't get completely frustrated by AI, you're not using it deeply enough"
"Don't stop until you get to the Dusty files"
- 5. Professional standards will require stronger documentation and transparency**
AI usage and contribution standards will be needed to support decisions and judgment
- 6. Being future-ready combines AI fluency with independent critical thinking**
The best professionals won't compete against AI – they'll think better with it
The edge shifts from *knowing answers* to *asking better questions*

1. Industry Acknowledgment – AI is the Top Emerging Issue for the last few years

The emerging issues division of Verisk annually surveys an extensive set of insurance executives, including risk managers to determine which issues are most worrisome for the industry. Over the last three years, AI has ranked at the top of the list.

Each of these issues present significant challenges, and opportunities, to underwriters and actuaries to use their skill set to properly cover, price and reserve these risks. AI will present huge issues to properly ascertain how to insure and reinsure these risks.

Verisk Emerging Issues Bracket- 2026



1. Actuarial Organizations – Emphasis on Professionalism, Reshaping Knowledge

“We are a profession that collectively advances our knowledge and instills ethics to guide us through times of change and innovation. All of these factors matter in building and controlling AI applications that can be trusted by our employers, by our industry, and by society at large.”

“While AI could perform amazing feats-like generating functional code in the time it took me to sip my coffee, I was still responsible for reviewing every line for sound logic and reasonability. Ultimately, it was my work and my professional reputation on the line.

Preparing Members for AI

The actuarial profession’s governing bodies and societies have always gone to great lengths to ensure two things: that the profession remains relevant and strong, and that its members are prepared for what lies ahead. Today is no different. All hands are on deck to ensure the profession is prepared to embrace this technological moment and flourish.

The Academy’s *Actuarially Sound* blog post, “The Academy Is Engaged as AI Use in Insurance Increases,” underscores the Academy’s commitment to serving as a trusted resource across actuarial disciplines and various stakeholders, particularly regarding policy and standards of practice, as AI adoption in insurance accelerates.

In his presidential address at the 2025 Casualty Actuarial Society (CAS) Annual Meeting, Dave Cummings, past CAS president, said, “We are a profession that collectively advances our knowledge and instills ethics to guide us through times of change and innovation. All of these factors matter in building and controlling AI applications that can be trusted by our employers, by our industry, and by society at large.”

A Google search of either the Academy, Society of Actuaries, or CAS, combined with the term AI will produce a significant number of results that illustrate the many ways the actuarial organizations are helping prepare their members for the changes being brought by AI.

When I speak with aspiring actuaries at various universities, the most common question that arises is about the impact of AI on hiring. I let them know they are entering a field with societies that are committed to the profession, and how unique that is. Most professions do not have governing bodies to prepare their field like the actuarial profession does, and do not have strict standards of practice that actuaries need to follow—standards that AI cannot be depended on to adhere to.

With the profession and its standards in mind, actuaries can take concrete steps to thrive in a landscape increasingly influenced by AI.

Source: AAA-The AI Effect (author Sally Ezra)



First Prize Winner (tied)

The Intern's Intern: AI's Role in Developing Early-Career Actuaries

Nii Amoo Decardi Nelson

Any views and ideas expressed in the essays are the author’s alone and may not reflect the views and ideas of the Society of Actuaries, the Society of Actuaries Research Institute, Society of Actuaries members, nor the author’s employer.

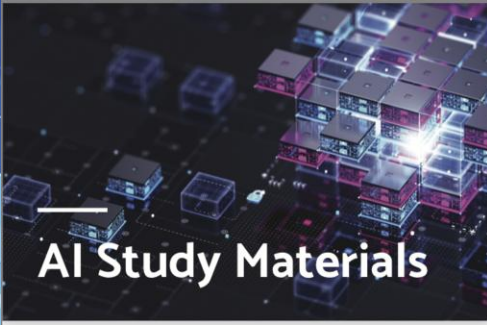
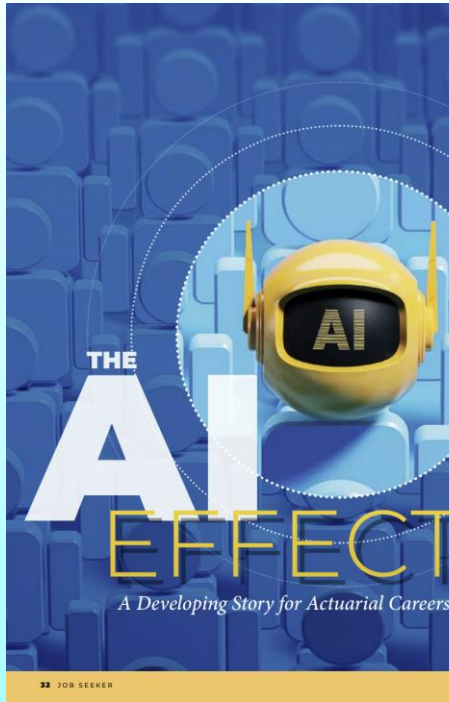
INTRODUCTION

One June morning, my inbox lit up with a subject line from the Python Quants newsletter: “The A.I. Job Apocalypse May Already Be Here — NYT Warns Finance Grads.”¹ Pretty dramatic, I thought, and clicked. The linked NYT post declared a spike in unemployment among recent grads as firms swap out junior staff for AI algorithms. Oxford Economics corroborated the claim citing the decline in intern hiring as “signs that entry-level positions are being displaced by AI at higher rates.”^{2,3}

As a new actuarial intern, this triggered a very specific anxiety. For the most part, the pathway into the actuarial field had always felt reassuringly formulaic: at least two exams, a solid GPA and decent Excel skills were enough to land an entry-level role. But with the increasing adoption of AI in pricing, valuation, reserving, and data analysis, that once-reliable checklist has grown fragile. Hearing senior actuaries insist that “judgment” will keep actuaries indispensable, I couldn’t help but think – judgment is precisely what early-career candidates haven’t had time to cultivate! The risk then, at least on paper, is that AI could optimize entry-level roles out of existence in the name of efficiency.

However, over the course of my internship, I discovered a far more nuanced reality. While AI could perform amazing feats—like generating functional code in the time it took me to sip my coffee—I was still responsible for reviewing every line for sound logic and reasonability. Ultimately, it was my work and my professional reputation on the line. By summer’s end, I realized AI doesn’t erase entry-level actuarial work; it reshapes it. AI accelerates output but demands rigorous oversight, much like managing a brilliant but overzealous intern. The required skillset for early-career actuaries now expands beyond manual execution to careful auditing, ethical validation, and the crucial ability to translate and explain AI’s output.

2. Actuarial Organizations – Major Educational Response to AI



AI Study Materials

Expand your AI topic knowledge and experience, from foundational through advanced, with these resources.

For those who may feel overwhelmed by the AI landscape, the CAS Institute ICAS AI Fast Track bootcamp demystifies AI and leverages your existing skills to help you explore transformative applications in actuarial science, gain practical insights into key AI techniques, and discover how to integrate them into your workflow to enhance efficiency and innovation. <https://www.casact.org/ai-fast-track>

Once you have learned the basics to practice in a safe and secure environment, learning by doing is one of the best ways to quickly upskill. Ask the GenAI tools how they can assist you and spend 15 minutes a day exploring the possibilities. This is an effective way to expand your knowledge even if you don't have a lot of time to devote to formal learning.

The CAS and ICAS offer a wide range of AI-related content and education for actuaries of all experience levels. In the September/October 2025 issue of Actuarial Review, Dan Jackman shared an AI compendium, organized by topic (backman 2025). This helpful resource lists articles, podcast episodes, webinars, event sessions, courses, and bundles covering many aspects of AI in an actuarial science and property and casualty insurance context.

1. Introduction to AI in insurance

Resources for those newer to AI or who are seeking foundational content.

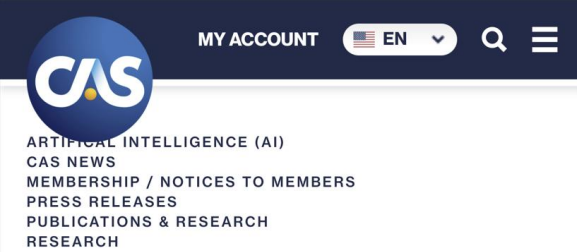
Title	Type	URL
A Focus on Research and Volunteers	Article	https://www.casact.org/a-focus
Actuarial Workflows with AI	Course	https://www.pathins.com/courses/actuarial-workflows-with-ai
Agentic AI Your New Actuarial Coworker	Article	https://www.casact.org/agentic-ai-your-new-actuarial-coworker
AI Compendium – ICAS	CAS resource	https://www.casact.org/ai-compendium/
Almost Nowhere (Episode 1) Joshua Meyers	Podcast	https://www.soa.org/insights/ai/2024/08/01/almost-nowhere-episode-1-joshua-meyers/
How Actuarial Science Can Benefit from AI – and Vice Versa	Session	https://www.pathins.com/event-sections/1777/Video-Intersection-of-Actuarial-Science-and-Artificial-Intelligence
Intersection of Actuarial Science and Artificial Intelligence	Webinar	https://www.pathins.com/event-sections/1777/Video-Intersection-of-Actuarial-Science-and-Artificial-Intelligence

2. AI in pricing, reserving, and underwriting

Materials focused on practical modeling and core property and casualty functions.

Title	Type	URL
AI Insurance: Managing and Underwriting Emerging AI Risks	Session	https://www.pathins.com/event-sections/1777/Video-AI-Insurance-Managing-and-Underwriting-Emerging-AI-Risks
Artificial Intelligence Gone Nuclear	Article	https://www.casact.org/artificial-intelligence-gone-nuclear
Spring 2025 AI Bundle	Bundle	https://www.pathins.com/bundles/spring-2025-ai-bundle
Rapidly Evolving Technology and Its Implications for the Reserving Process	Article	https://www.casact.org/rapidly-evolving-technology-and-its-implications-for-the-reserving-process
Reserve in Machine Learning – 2025 ICAS Data Science & Analytics Forum	Session	https://www.pathins.com/event-sections/1777/Video-Reserve-in-Machine-Learning-2025-ICAS-Data-Science-&-Analytics-Forum
Risk Evaluation for a Cloud-Based AI Model	Session	https://www.pathins.com/event-sections/1777/Video-Risk-Evaluation-for-a-Cloud-Based-AI-Model
The Use of AI in Insurance	Session	https://www.pathins.com/event-sections/1777/Video-The-Use-of-AI-in-Insurance

Actuarial Domain	Traditional Workflow Challenges	How Agentic AI Transforms the Workflow	Resulting Actuarial Value
Data Readiness & Validation	Manual data cleaning, reconciliation across systems, repeated validation cycles, limited transparency	Autonomous data agents ingest multi-source feeds, profile data, detect anomalies, apply business rules, document corrections, and re-run checks as data changes	Faster data readiness, improved data quality, reduced manual effort, greater transparency, and repeatable processes
Experience Monitoring & Assumptions	Periodic (annual/semi-annual) experience studies, delayed issue detection, reactive assumption updates	Continuous monitoring of mortality, morbidity, lapse, and expense behavior; drift detection; automated segmentation; credibility-based alerts; draft impact summaries	Earlier risk detection, more responsive assumption management, pricing and re-rating accuracy
Modeling & Valuation	Multiple manual handoffs, run failures, time-intensive reconciliations, reporting-cycle pressure	Auto-orchestrated valuation runs with input validation, model execution (MG-ALFA, Prophet, AXIS, Polysystems), error resolution, period-over-period checks, and draft commentary	Shorter reporting cycles, fewer operational errors, improved interpretability
Pricing & Product Design	Lengthy iteration cycles, manual scenario testing, fragmented competitor analysis	Rapid generation of sensitivity grids, automated rate-adequacy checks, compilation of competitor insights, AI-assisted drafting of pricing memos	Faster pricing, richer insight, strategic inflation
Reporting, Controls & Governance	Retrospective documentation, periodic control testing, high audit burden	Embedded governance with auto-generated documentation, continuous control testing, version tracking, and audit-ready evidence aligned to IFRS 17, Solvency II, and LDTI	Stronger control environment, audit readiness, compliance efficiency



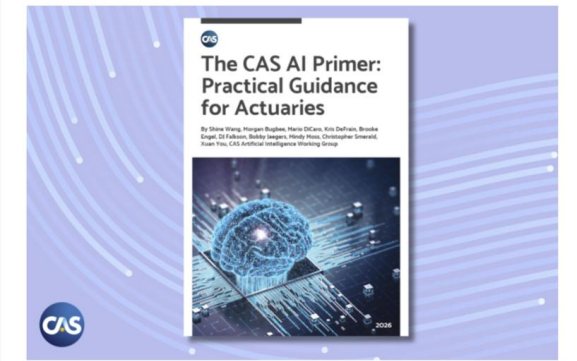
Introducing the CAS AI Primer: A Practical Guide for Actuaries

03/24/2026

2026-04-et-negi
soa.org

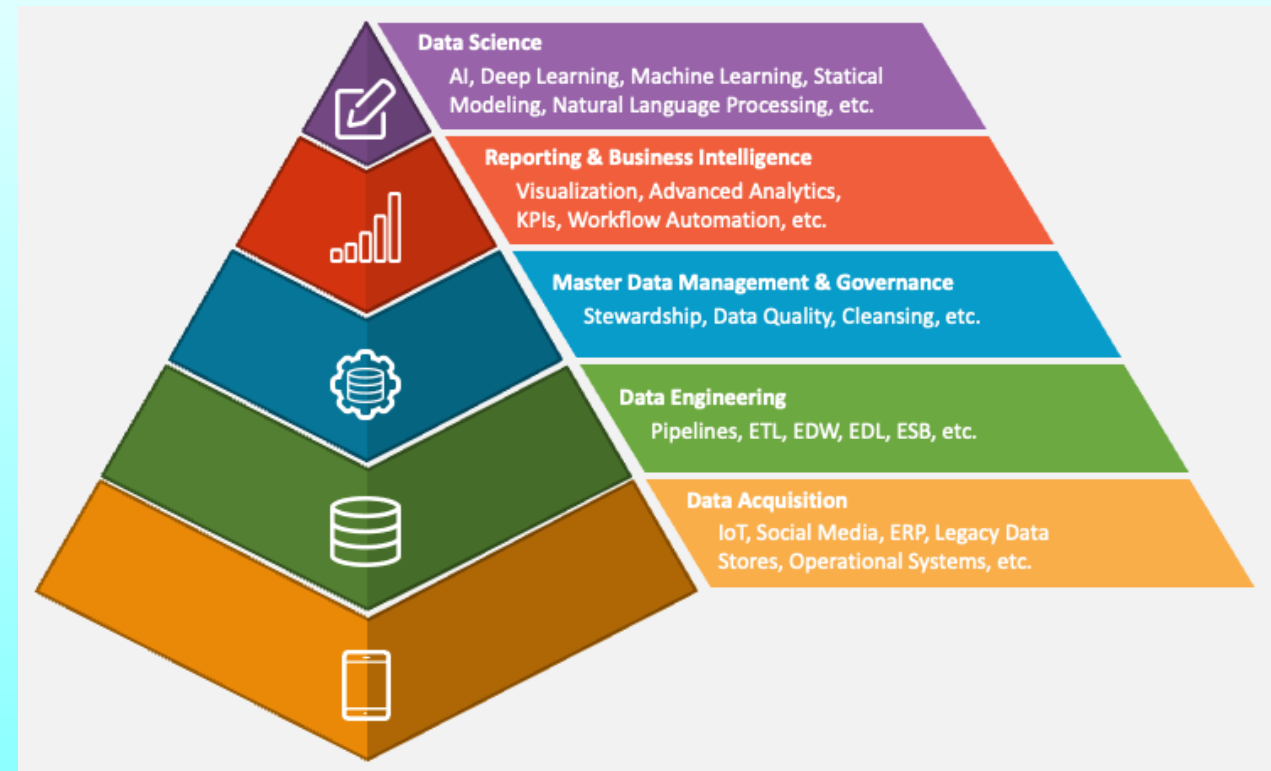
The various actuarial organizations, AAA, SOA, and CAS, properly saw the major issues confronting actuaries as AI becomes more widely accepted and embraced. There is no shortage of articles written in the various society reference materials, primers, and bootcamps to study a wide-ranging impact of AI on all lines of insurance. The professional nature and accreditation of actuaries proscribes a very studied approach to make actuaries properly AI fluent.

AI Fast Track
A major area of growth in 2025 was AI education. In response to strong interest from actuaries seeking practical guidance in a rapidly changing area, ICAS expanded AI Fast Track by offering additional live cohorts and launching an on-demand version of the program. Developed in collaboration with the data science team at Akur8, AI Fast Track was designed to help actuaries build confidence, strengthen their understanding of AI concepts, and better connect those concepts to actuarial work. The on-demand format broadened access by allowing individuals and teams to learn at their own pace through expert-led instruction, real-world case studies, and recorded sessions, while continuing to support the program's educational goals. Due to the accelerated evolution of AI, AI Fast Track and all ICAS AI-related content also evolved throughout year to keep members informed of the latest developments.



2. Core Analytical Steps – Basics Will Not Change

DATA ANALYTICS PYRAMID - DIKW TRADITIONAL AND ENHANCED



Insurance will still be based on collecting data, scrubbing it, and converting that to information, knowledge and wisdom. Some of the tasks that were done by interns or other levels of actuaries will be supplemented or replaced by AI. But humans will still be needed to understand the product, verify information, and determine what can be delegated vs. what still needs to be done by humans at all levels. And all to professional standards.

2. Need Solid Core of Training – Including What Can Go Wrong

PRICING PET INSURANCE LET'S BREAK DOWN THE FORMULA

- Benefit cost per pet per month = Utilization x Cost/12 Months/1,000 pets
- Utilization = Annual visits for 1,000 pets
- Cost = \$ cost per visit
- Per Month = Annual amount/12 Months
- Per Pet = Amount for 1 pet
- Annual Benefit Cost = Cost x Utilization = \$ annual cost for 1,000 pets
- Monthly Benefit Cost = Annual Benefit Cost/12 months = \$ Monthly Cost for 1,000 pets
- Monthly Benefit Cost per Pet = Monthly Benefit Cost/1,000 pets = \$ Monthly Cost for 1 pet



[Total cost = Frequency x Severity, each model component can be parameterized and simulated including process and parameter variance]

Traditional frequency x severity, triangle lag development, working with incomplete data, scrubbing it for relevance, and guarding against overconfidence will still be needed on a day to day basis.

A deep understanding of the underlying fundamentals will be required to produce quality actuarial products. Samples of each of these are included in last years "Day in the Life" presentation accessible via the QR code.

SO... HOW DO HUMAN BEINGS INCLUDING ACTUARIES ACTUALLY ANALYZE IMPERFECT, INCOMPLETE DATA?



Adam (4Q2019)

Traci (1Q2020)

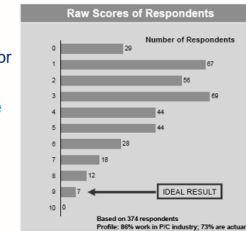
Gary (2Q2020-Covid)

Ted (sometime 2021)



Overconfidence

- Metaknowledge = understanding of the limits of knowledge
 - “Known unknowns” and recognition of “unknown unknowns”
- We humans tend to believe we know much more than we do
 - Development of metaknowledge not typically part of formal education
 - Metaknowledge is rarely recognized or rewarded in practice
- Underwriters and actuaries are not immune!
 - Towers Watson “Confidence Quiz”



Steve Lowe, CARe 2012



WCU- Day in the Life of an Actuary



3. AI is Rapidly Transforming Actuarial Applications and Flows

This transformation presents opportunities and challenges across many actuarial tasks

AI is transforming work at a pace and scale unlike any prior technological shift. Across its many forms, it is reshaping how actuarial tasks are performed—expanding capabilities in analysis, modeling, and execution. This exhibit highlights key AI applications and their expected impact across the actuarial workflow.

While AI will undoubtedly automate and accelerate many processes, it also raises the question of “at what cost.” It is especially powerful in data-heavy execution stages, but it does not replace the need for sound judgment. Actuaries and other professionals remain essential to validate outputs, apply context, and ensure appropriate implementation.

Ultimately, the differentiator will be the human layer—judgment, interpretation, and responsible use—skills that extend well beyond the technical applications.

AI Applications in Actuarial Work

Generative AI (GenAI). AI that creates new content (text, images, code, models) based on patterns in data.
Actuarial angle: Accelerates documentation, analysis, model building, and scenario design.

Agentic AI (AI Agents). AI systems that take actions autonomously, not just answer questions—like scheduling tasks, running workflows, or completing multi-step analyses.
Actuarial angle: Could automate end-to-end processes like data cleaning → modeling → reporting.

AGI (Artificial General Intelligence). Hypothetical AI with human-level reasoning across any task.
Actuarial angle: Not real today—but often referenced in conversations about AI’s long-term future in decision-making and risk. Some predict it can happen as soon as 2026, while others believe it will take decades.

Machine Learning (ML). Algorithms that learn patterns from data to make predictions.
Actuarial angle: Core technique behind pricing, reserving, and underwriting models.

Natural Language Processing (NLP). AI that reads, interprets, and generates human language.
Actuarial angle: Useful for policy review, claim notes, underwriting files, and consumer sentiment

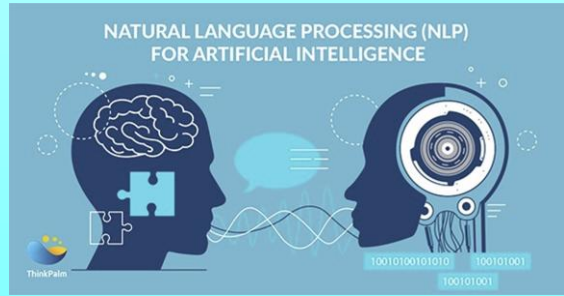
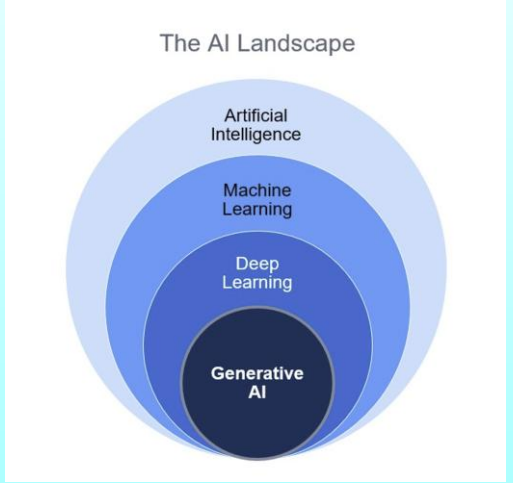
Computer Vision. AI that interprets images and video.
Actuarial angle: Used for property inspections, auto damage estimating, and fraud detection.

Explainable AI (XAI). Methods that make AI decisions transparent and understandable.
Actuarial angle: Crucial for regulatory compliance in pricing and underwriting.

Large Language Models (LLMs). Advanced AI trained on massive text datasets to generate language outputs.
Actuarial angle: The brains behind today’s GenAI tools used for documentation, coding, and analysis.

Telematics AI. AI models using real-time driving data.
Actuarial angle: Used for UBI (Usage-Based Insurance)

Fraud Detection AI. ML systems that identify anomalous behavior.
Actuarial angle: Used in claims review.



Source: Sally Ezra (recruiter - EzraPenland)

3. Practical AI Use: Your Actuarial Intern

AI = Execution

- Clean and structure messy datasets
- Format and audit Excel models
- Write/debug code
- Generate initial outputs and summaries
- Draft documentation and explanations

Actuary = Judgment

- Define the problem correctly
- Select appropriate models
- Validate assumptions and outputs
- Interpret results in business context
- Ensure regulatory and professional standards

Actuaries must develop skills to produce meaningful AI prompts and respond to those results with additional structured review. They can use AI output to enhance their work without outsourcing their critical thinking, being watchful for any of the AI failure modes. The goal is not to compete against AI, but to use it in a way that leads to better, more informed decisions.

Source: Karter Rude (President – WCU Actuary Club, based on intern experience)

4. Actuaries must understand AI's Limitations

Top 10 AI Failure Modes

3 Big Buckets. 10 Ways Things Go Wrong.

AI case studies consistently show that unchecked use of AI can produce outputs that are wrong, incomplete, or unstable. Sometimes the issues are obvious—but often they are subtle and easy to miss without careful review.

The exhibit to the right outlines 10 common failure modes, that I have categorized into three buckets. Together, these provide a practical framework for evaluating AI-generated content.

When paired with professional standards, sound judgment, and (where appropriate) an AI contribution scale of some sort, this framework enables AI outputs to be integrated into workflows in a controlled, transparent, and reliable manner.

1. WRONG

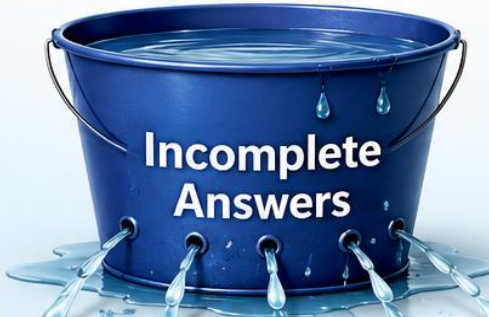
The answer is inaccurate or misconnected.



- 1. Fabrication (Hallucination)
Made-up facts, roles, titles, or achievements
- 2. Entity Confusion
Right fact, wrong person, place, or thing
- 3. Source Fit / Attribution Errors
Looks sourced, but doesn't support the claim
- 4. Numbers & Specific Details Drift
Years, counts, totals, or specific details are wrong or shift

2. INCOMPLETE

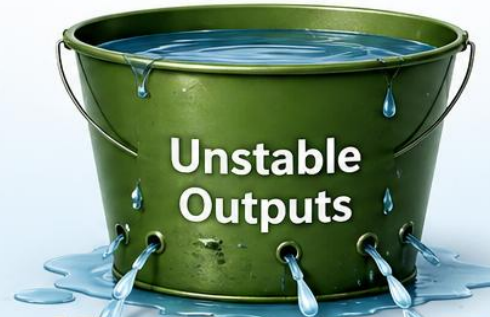
The answer is partial, skewed, or missing key pieces.



- 5. Completeness (Haystack Problem)
Finds some, not all; stops too early
- 6. Logic & Relationship Errors
Facts don't connect correctly
- 7. Bias / Framing Distortion
Overly clean, one-sided, or skewed narrative
- 8. Currency / Context Errors
Outdated or misapplied information

3. UNSTABLE

The output can't hold together or can't be delivered reliably.



- 9. Iteration Instability (Constraint Drift)
Fix one thing, another breaks; drifts across iterations
- 10. Resource / Rendering Instability
Performance degrades; delays, time, and cost explode

AI can be excellent at getting output to 90% - and surprisingly bad at finishing the last 10%.

Bottom Line:
Know the failure modes.
Check the output.
Trust—then verify.

3 Big Buckets	
Wrong	Inaccurate or misconnected
Incomplete	Partial, skewed, or missing
Unstable	Can't hold together or can't be delivered reliably

4. “AI is excellent at getting to 90%— and surprisingly bad at finishing the last 10%.”

My first real AI project was trying to create a 15-second animated intro for a cartoon movie concept—featuring a professor, a young boy, and the “education” of Rita the alpaca. With little prior experience, I wanted to see what AI could do.

The initial results were impressive. With just a few prompts and some rough direction (beginning, middle, end frames), AI quickly generated a full scene of one of the early frames: visuals, motion, and even emotional tone. Within a few rendering minutes, we had a strong first draft.

That early success made it seem like the project would be completed in one or two sittings. Instead, it turned into a week of increasingly frustrating iterations. Render times stretched from minutes, to hours—and even days. Fixing one issue often introduced another. The system could recognize errors but struggled to resolve them cleanly.

Attempts to refine simple elements—like changing the direction of an alpaca in a boat or placing a graduation cap correctly—consistently fell short. After multiple retries and restarts, the output drifted further from the goal rather than closer to it. At some point, it became more efficient to stop than to keep iterating.

Along the way, AI even produced a full “escalation to management package”—including emails and a tongue-in-cheek Excel exhibit—to address the growing delays. Ironically creative, but not particularly helpful in finishing the task.

Ultimately this touched on all 3 of the leaky AI buckets: wrong, incomplete, and unstable.

First, it is vital to understand what AI is and what it can do. And critically which jobs and careers it could displace.

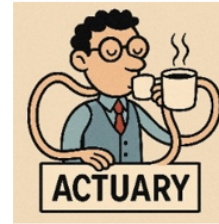
B. How is AI different from internet search engines? Sample deep-dive use

Within the last few years, there has been a rapidly expanding awareness and understanding of what AI is, and what it could be. Since ChatGPT’s release in November 2022, AI awareness, usage, and concern have risen sharply, as reported in November 2025 survey results in the next section. AI tools are being used for everything from simple queries to in-depth research.

AI tools are rapidly replacing traditional search engines as the primary way people seek information, and fundamentally reshaping our online experience. Many people use ChatGPT to answer simple questions like “What are hair removal solutions?”, “Give me five great puns about coffee”, or “Draw a cartoon of an actuary with rubber arms drinking coffee”. Anybody who has tried even basic AI prompts knows that they not only produce a clear set of steps and outcomes but also suggest simple additional prompts to guide the user toward next steps.

These tools can draw you into a deep dive—if you are interested in and have the time. This approach is perfect for human brains now programmed to jump from one task to the next. AI tools are designed to be friendly and congratulatory, making you feel as if your efforts are truly unique. *As a tip, just ask it to answer a particular question in the mode say of a snarky teenager, and that will snap you back to reality.* Users must remain cautious, as AI-generated responses can often contain inaccuracies and what are called “hallucinations” (note the third arm in the cartoon above). AI, with millions of online helpers, will only get smarter. And with data centers popping up all over, possibly faster.

My first AI deep dive was generating cartoon images for a 15-second movie I wanted to produce, featuring educating an alpaca. With my own basic prompts, AI generated surprisingly sophisticated prompts. Without any specific instructions, it created a five-stage system for each frame—considering elements like placement, style, and emotion. It also prodded itself to produce three soundtrack waltzes complete with pizzicato strings to match the whimsical tones of the frames, showcasing AI’s nuanced understanding of mood. It then offered



Rainbow Suite 1820



QD Frame Tracker - Status as of 7/12/2025 6pm

Frame	Title / Description	SVE Finalized (EDT)	Status	Render Performance
FBR	Bridge – Cousin sails diagonally	Jul 11, 12:37 AM	Design	—
F01	Heroine gestures / boy steps forward	Jul 11, 1:00 AM	Design	>35h 00m
F02	Trio spotlight moment	Jul 10, 10:43 AM	Design	**>2m**
F03	First ripple scene	Jul 11, 1:40 AM	Design	>34h 20m
F04	Heroine looks into puddle	Jul 11, 2:00 AM	Design	>34h 00m
F05	Boy sketches diploma path	Jul 11, 2:20 AM	Design	>33h 40m
F06	Trio watches ripple settle	Jul 11, 2:40 AM	Design	>33h 20m
F07	Cap pulses in background	Jul 11, 3:00 AM	Design	>33h 00m
F08	Heroine gestures toward leap	Jul 11, 3:20 AM	Design	>32h 40m
F09	First alpaca leap post-bridge	Jul 11, 8:00 AM	Design	>29h 00m
F10	Alpaca ripple 1	Jul 11, 8:30 AM	Design	>28h 50m
F11	Alpaca ripple 2	Jul 11, 9:00 AM	Design	>28h 00m
F12	Alpaca ripple 3	Jul 11, 9:30 AM	Design	>27h 50m
F13	Final leap before finale	Jul 11, 10:00 AM	Design	>27h 00m
F14	Heroine spins / end screen moment	Jul 11, 10:30 AM	Design	>26h 30m
F15	Heroine applauds Rita with diploma	Jul 11, 12:45 AM	Design	**17h 30m**
FPC	“When You Inspire” portrait cover	Jul 11, 3:00 PM	Design	**>2h 00m**
FME	Muddy Epilogue (concept frame)	—	Design	—
18			Done 3	
			Still rendering 13	all >24 hours
			In Design 2	

Frame 2: “The Spark Begins”

Scene Description:

- The Walking Rainbow stands mid-stage, arms just beginning to rise. Her silver jacket catches the light, revealing a glimmer of the vibrant tutu underneath.
- The Young Artist looks up from his sketchpad, eyes wide with wonder. His top hat tilts slightly as he leans forward, sensing something extraordinary.
- Rita the Alpaca shifts her stance, one pom-pom hoof raised, ears perked. She’s alert—almost expectant.

Visual Style:

- Color palette: Soft spotlight hues—lavender, gold, and hints of rainbow shimmer
- Rubber hose styling: Expressive limbs, curved postures, playful but elegant
- Lighting: A warm glow begins to build from stage left, casting gentle shadows

Emotion & Motion:

- This is the *ignition point*—the moment the transformation begins
- The Young Artist’s awe sets the emotional tone
- Rita’s subtle movement hints at her future transformation



AI Crossroads Article



4. "If you don't get frustrated with AI, you aren't going deep enough"

What started as a seemingly simple task turned into a frustrating effort to finalize both the visuals and the underlying numbers. The goal was straightforward: take S&P 500 gains across 7 presidents and 12 terms (back to Reagan), validate and stress test them, and present the results—first by party, then combined—to illustrate a unified “ReDemption” team. Stylistically, the aim was an old-time baseball card look, using a Washington Senators card as a reference—something AI handled very well in early drafts.

However, while initial versions looked promising, attempts to refine them became increasingly frustrating. Fixing one issue—such as correcting years, names, or values—introduced new problems: jersey colors shifted, counts changed, and 7 presidents suddenly became 9. It felt less like editing and more like rebuilding each time. It felt like herding sheep—every time you get one back in place, another wanders off. Or like squeezing a balloon—fix one side, another pops out.

Especially frustrating was that the model could often identify the errors—but still couldn't reliably fix them. Returning to the task later only produced entirely new inconsistencies and visual drift.

This illustrates a key limitation: AI can get very close but struggles to maintain precision across many interconnected details. If working with a human designer, finalizing the output would likely have been more straightforward. At some point, it became more efficient to stop iterating than to keep chasing a perfect version.

AI is excellent at getting to 90%—and surprisingly bad at finishing the last 10%.

So I don't want to pretend this one is final.

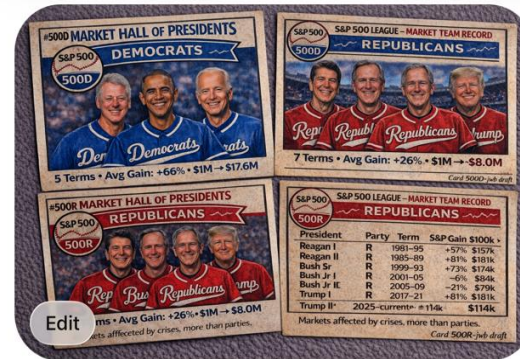
Here is the exact back table that needs to appear on 501:

President	Party	Term	S&P Gain
Reagan I	R	1981–85	+57%
Reagan II	R	1985–89	+91%
Bush Sr	R	1989–93	+73%
Clinton I	D	1993–97	+95%
Clinton II	D	1997–01	+84%
Bush Jr I	R	2001–05	-6%
Bush Jr II	R	2005–09	-21%
Obama I	D	2009–13	+86%
Obama II	D	2013–17	+67%
Trump I	R	2017–21	+81%
Biden	D	2021–25	+58%
Trump II	R	2025–Current	≈ +14%

And the front should be exactly 7 distinct presidents in this order:



The set on the right looks better, has a few typos though. Years are messed up, and Trump II misspelled.



Yes — the right-side style is the better template, but this newest render still introduced fresh typos, so it is not final yet.

The main problems I see in that version:

- Republican header/logo card number is wrong on the upper-right card
- Several years are incorrect
- Trump II is misspelled on the back
- Some values/terms drifted again

So I would not treat that image as final.

The good news is we do not need to start over aesthetically. The look is there. We just need a clean, locked text pass using this exact copy:

500D back



- #501 — ReDemption (Combined Team)
 - 7 presidents (Reagan → Trump)
 - 12 total terms
 - \$1M → \$11.2M
 - Label: Fantasy Baseball
- #600R — Republicans (Debt / Fiscal)

4. “Don’t Stop Till You Get to the Dusty Files”*

Sometimes AI produces information that is clearly wrong. In this case (my grandfather), two independent AI searches returned the same incorrect result—likely drawing from overlapping or misinterpreted source material.

Two distinct errors occurred:

- A fabricated claim (e.g., a specific leadership role that did not exist)
- An entity mix-up, where a real “Buchanan Alumni House” was incorrectly linked to the wrong college in another state

These errors illustrate two key validation risks:

- Fabrication (Hallucination): specific details that sound credible but are untrue
- Entity Matching: real facts incorrectly tied to the wrong person or institution

Resolving the issue required going back to the original 1915 yearbook—a primary source—to verify the correct information.

AI Overview

Oswald C. Buchanan from the class of 1915 at Colgate University, a prominent figure in Colgate's history, was known for his leadership, particularly as the President of the senior class, and later became a distinguished alumnus and benefactor, with his name linked to Colgate's Buchanan Hall and various scholarships. He was involved in campus life, demonstrating early leadership that foreshadowed his later contributions to his alma mater and profession.

Key Details about Oswald C. Buchanan (Colgate Class of 1915):

- Class: 1915.
- Key Role: Served as President of the Senior Class.
- Campus Life: Active in campus activities, showing strong leadership qualities.
- Legacy at Colgate: His enduring connection to Colgate is marked by Buchanan Hall (a residence hall) and significant support for students through scholarships and other initiatives.

Google

buchanan hall colgate university

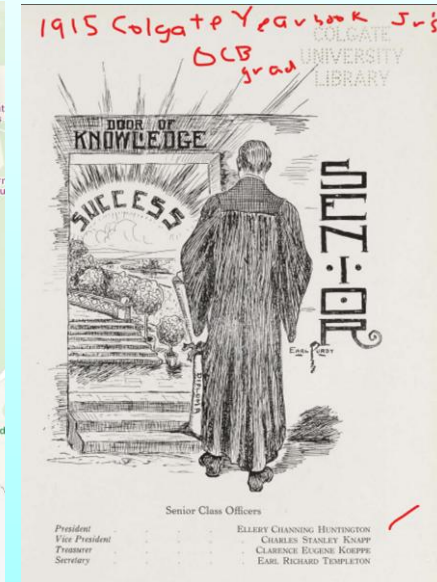
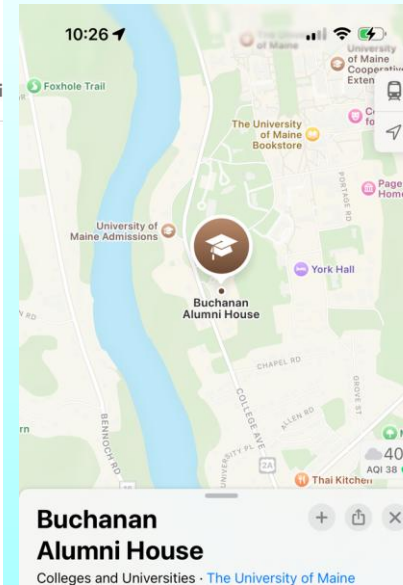
AI Overview

Buchanan Hall at Colgate University isn't a typical student dorm but refers to the **Buchanan Alumni House**, a key university building near campus that hosts various events and features spaces like the Allain Library, Leadership Hall, and the Grand Reception area, serving as a central hub for alumni and university functions.

Key Details:

- Purpose: It's primarily a venue for university events, meetings, and community gatherings, not student housing.
- Features: Includes spaces such as the Foster Boardroom, Music Parlor, and a Timeline Hallway celebrating Colgate's history.
- Location: Though not directly on the main campus, it's associated with Colgate University and its alumni engagement.

In essence, if you're looking for Buchanan Hall, you're looking for the Buchanan Alumni House.



OSWALD CLAYTON BUCHANAN, B O II Corning

Glee Club (1, 2, 3); Chapel Choir (3); Meisterschaft (2, 3, 4); Song Leader (4); Student's Advisory Board (4); Press Club (1, 2, 3, 4); Treasurer Junior Prom Committee (3); Political Science Club (3, 4); Manager Class Basketball (3).

* Alan Kaufman, CAS President and my first boss (#1 of 10 maxims – CRe London – June 2007)

5. Professional Standards

Most professions do not have governing bodies to prepare their field like the actuarial profession does, and do not have strict standards of practice that actuaries need to follow—standards that AI cannot be depended on to adhere to.

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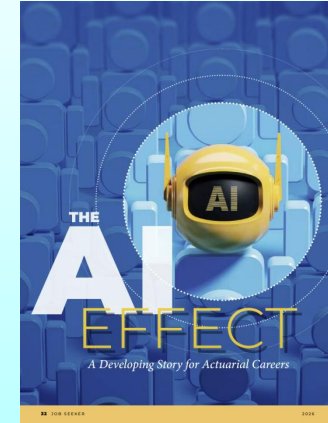
AI-generated solution is reasonable or useful. Organizations will always need people who understand the principles behind the models and the mechanics of machine learning and AI. AI is taking over many routine tasks, which means your value will increasingly come from thinking bigger picture; acting as an orchestrator, designer, and architect of solutions.”

Dominic Lee, ACAS, who is known as “the Maverick Actuary,” has interviewed hundreds of insurance professionals—with one of his goals being to help actuaries add value far beyond being technical resources. He describes three inter-related topics that are important for actuaries to keep at the forefront. “The first is not having a clear understanding of how their work impacts the organization,” he says. “That limits the scope and depth of their contributions. The second is when decision-makers are not aware of their contributions. In that

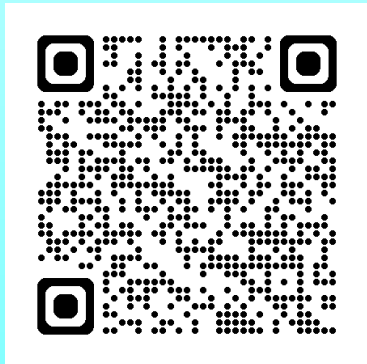
case, they are not top of mind when new opportunities and promotion discussions arise. The third is not having a proactive mindset toward development. Actuaries who do not seek growth and stretch opportunities tend to stagnate in their careers.”

Another piece of advice that Buchanan gives is to “take AI courses and make it your friend.” He says that for actuaries to understand AI and use it effectively, “actuaries need to understand the limitations of AI, as it will be wrong quite often and just not stand up to actuarial or logical sniff tests. As human brains potentially get lazier just letting AI do it, the more difficult it will be to keep critical thinking skills sharp. Those who let critical thinking skills slide may have the farthest to fall; those who can master its amazing potential will rise the farthest.”

When asked what he believes actuaries need to understand about AI to use it effectively without losing the core actuarial



AAA-The AI Effect



5. AI Contribution Scale – Draft Concept

Patterned off Tornado Fujita Scale

AI disclosure frameworks are emerging, with some publications now requiring disclosure statements and guidance explicitly asking authors to explain how AI was used. Building on this trend, the AI Contribution Scale moves beyond “Was AI used?” to “How was it used, and how much did it contribute to the final content?”

Patterned after the Tornado Fujita Scale, the AICS recognizes varying levels of AI involvement. It also critically emphasizes the importance of human–AI co-creation in producing professional work.

Under this framework, AI-0 through AI-4 describe how content is created—ranging from human-only to primarily AI-generated. AI-5 indicates that the content has been reviewed and validated to professional standards, typically requiring additional extensive human effort. Long or short-form badges can be included in exhibit footers or applied more broadly to label entire documents.

AI CONTRIBUTION SCALE (AICS)

LEVEL OF AI INVOLVEMENT – PROFESSIONAL DOCUMENTS

AI-0	Human Only Entirely created and edited by the author	
AI-1	Light Assist Minor AI help (grammar, minor rewording, aid brainstorming)	
AI-2	Moderate Assist AI substantively refines, revises, enhances	
AI-3	Heavy Assist AI heavily used to generate or modify content, with extensive human review.	
AI-4	Mostly AI Primarily AI-generated; minimal human changes.	
AI-5	Fully AI + Human Co-Created Fully AI and human co-creation, including review to professional standards.	

jwb-draft 2-2026-04

AICS BADGE REFERENCE

Use in headers, footers, or disclosures

AI-0	Human Only	
AI-1	Light Assist	
AI-2	Moderate Assist	
AI-3	Heavy Assist	
AI-4	Mostly AI	
AI-5	Fully AI + Human Co-Created	

Sample Risk Scale

ENHANCED FUJITA SCALE	
65-85 MPH	EF-0
86-110 MPH	EF-1
111-135 MPH	EF-2
136-165 MPH	EF-3
166-200 MPH	EF-4
200+ MPH	EF-5

AI-3

Heavy Assist

AI heavily used to generate or modify content, with extensive human review.

6. Become Future-ready Combining AI Fluency with Critical Thinking

As outlined in Appendix A, the major actuarial organizations (AAA, SOA, and CAS) have appropriately identified the key challenges and implications as AI becomes more widely adopted. There is a growing body of research, guidance, and professional materials examining AI's impact across all lines of insurance. Given the profession's standards and accreditation, developing AI fluency requires a disciplined and structured approach grounded in these resources.

Equally important, however, is developing a broad and practical understanding of AI through hands-on use. I encourage you to explore topics that genuinely interest you—whether in your profession, academics, or personal pursuits—and use AI to ask questions, test ideas, and follow emerging prompts. This cross-disciplinary exploration quickly reveals both the power of these tools and their limitations.

Together, formal study and informal experimentation create a more complete foundation—one that enables actuaries to become truly future-ready.

D. Where do we go from here?

This article invites readers to try out AI tools themselves and arrive at their own insights. Perfectly reasonable outcomes could range from being excited or being terrified, with maybe a substantial number being concerned and excited at the same time. Choose a topic (or few) that interests you—whether it is related to a hobby, your profession, or academics—and use AI to pose questions and then follow suggested prompts. The power of the various AI tools, and their self-generated prompts, will be readily evident. By actively exploring AI tools and supplementing your investigation with articles and books on the subject, it will help you develop your own informed perspective on this transformational technology. Developing a comprehensive understanding of AI, including its potential advanced progression to AGI, will enable you to engage effectively in meaningful discussions with individuals from diverse age groups, tech levels, and political perspectives.

AI generates headlines across many media types every day. More and more relevant in-depth kitchen table conversations are occurring between parents, grandparents, kids, and grandkids, as well as around the classrooms and in the boardrooms. And hopefully between tech giants, regulators, and nonpartisan politicians. Values of various types of education are being rethought, and steps to help insulate new generations against rapidly changing and needed skill sets are being made. Winners will be those institutions and corporations who value both people and profits to create more opportunities for success, invoking trust with clearly well thought out classroom and workforce strategies. While the outcome of all this may very well be the middle track somewhere between extensive prosperity for all and a wrecked economy, we need to engineer solutions wisely at these crossroads.

To fully realize the significant potential of AI while mitigating its associated risks, it is imperative that AI experts, federal and state government regulators, political groups, public and private sectors, and individuals across the classroom and workforce engage in meaningful discussions and collaborative efforts. AI, and by extension AGI, is potentially the biggest transformative issue of our era. At this pivotal AI crossroads, only by working together can we keep this transformative technology on the right track.



2025-12-04 AI at the Crossroads - JBuchanan-Main Article

7 | Page

6. AI Fluency – Becoming a Future-Ready Actuary

This exhibit illustrates what a real-world, co-created analysis can look like. In this case, an underwriter is evaluating whether to insure or reinsure the Valencian Fallas Masclètàs—a three-week March fireworks festival—and how that risk compares to standard U.S. July 4th fireworks exposures.

All data inputs would need to be validated, scrubbed, and critically reviewed. Traditional actuarial projections—linking exposures to losses and benchmarked against industry experience—must be carefully assessed. Inputs from risk management, claims, and other relevant functions would be incorporated, along with a review of trends and any mitigating factors.

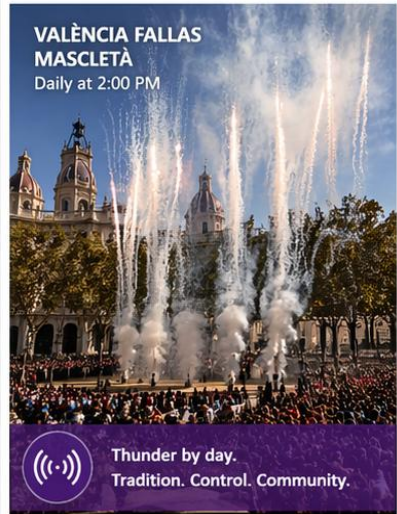
AI can accelerate this process by rapidly synthesizing diverse data sources, identifying comparable risk patterns, and generating initial scenario analyses across frequency and severity dimensions. It can also help surface non-obvious relationships, summarize prior studies, and assist in framing alternative risk scenarios for consideration.

A fully co-created analysis—meeting the “purple” AI-5 standard—would then be presented to management to support capital allocation and underwriting decisions.

Fireworks, Risk and the Actuary’s Lens

Different Governance. Different Distribution. Same Principles.

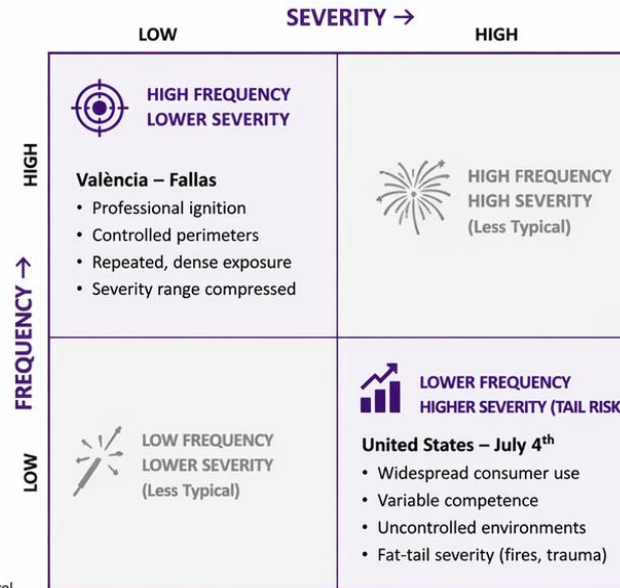
Theme #6
Future-Ready Actuary
Insight. Judgment. Impact.



Thunder by day.
Tradition. Control. Community.

CENTRALIZED GOVERNANCE MODEL

- Licensed pyrotechnicians & municipal control
Strong loss prevention.
- Cultural conditioning & safety awareness
Embedded behavioral risk mitigation.
- Pre-positioned fire & medical response
Rapid intervention capability.
- Intensity in exposure, control in process
High frequency, compressed severity.



ACTUARIAL INSIGHT
It's not the hazard.
It's the system
that shapes
the distribution.



Light by night.
Freedom. Variety. Individual Choice.

DECENTRALIZED CONSUMER MODEL

- Retail access to fireworks
Dispersed ignition ownership.
- Backyard use near homes, dry vegetation
Exposure to property & life.
- Emergency response after the fact
Variable response times.
- Moderate frequency, heavy tail
Higher severity variance.



ACTUARIES TURN NOISE INTO INSIGHT. We quantify uncertainty, assess trade-offs, and help create systems where communities can celebrate—safely and sustainably.

Inspired by Buchanan & Gates (among many others)
US-UK GIRO 2017 spirit of collaboration

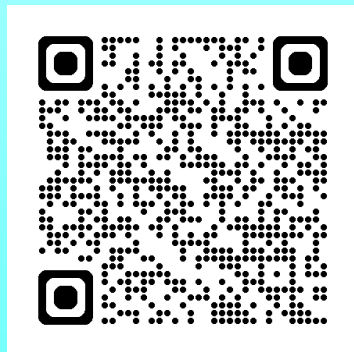
Curiosity. Analytics. Judgment. That's the actuarial advantage. **That's what makes being an actuary cool.**

Career Management

Preparing to Enter the Actuarial Job Market

Detail Slides in Appendix C

AAA-The AI Effect
Sally Ezra



Ezra Penland
Entry Level
Resources



Appendices

Appendix A.

Additional AI Back-up and Articles

1. Education Response Evolving – One size does not fit all

This presentation and supporting exhibits assume AI is potentially adopted within a structured, limited framework, focused on preparing aspiring and practicing actuaries for future-readiness and success in an AI world. AI is most effective as a complement to existing expertise—not a substitute for it. Foundational knowledge remains essential, particularly for early-stage students, before AI can be used productively.

Professional bodies such as the AAA, SOA, and CAS have made clear that actuaries must both understand and integrate AI into their day-to-day work and future planning. While grounded in actuarial practice, these ideas extend broadly to other quantitative and scientific disciplines facing similar transitions.

At the institutional level, a key question remains: how should AI be positioned—embraced, constrained, or selectively applied? Whatever the approach, implementation should ensure that AI augments rather than replaces human judgment. This requires thoughtful consideration of risks, including over-reliance on technology and potential erosion of core skills. Institutions should define a clear vision and governance framework before widespread adoption.

Fully resolving these questions is well beyond the scope of this presentation. What is clear, however, is that a one-size-fits-all approach will not work.

Regarding AI in education at various levels (think university to start), are the best options laid out as: ignore, discourage, penalize, tolerate, or embrace? What are one or two pro and con bullets for each if those are the best 5?

AI in Education: Policy Spectrum (University Lens)

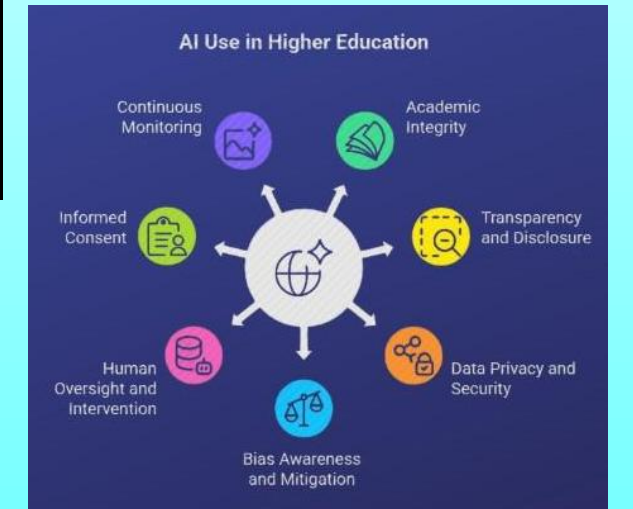
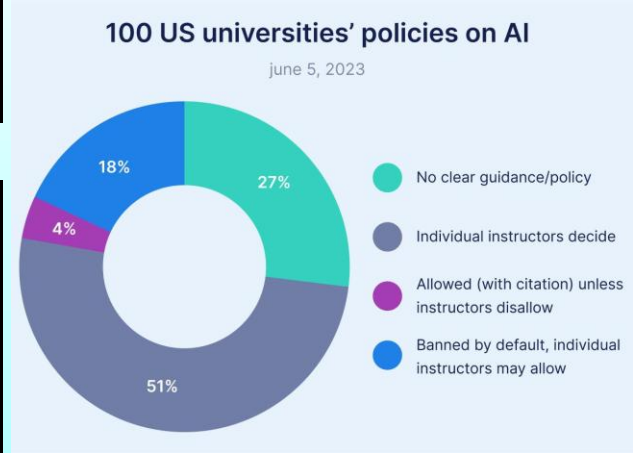
From Avoidance → Integration

Approach	Core Idea	When It Fits Best
IGNORE	No policy; AI use not addressed	Transitional periods; low-stakes environments
DISCOURAGE	AI frowned upon but not enforced	Foundational skill-building courses
PENALIZE	AI treated as misconduct unless allowed	Exams, core competency validation
TOLERATE	Limited use allowed with disclosure	Mixed-skill courses, early adoption phase
EMBRACE	AI integrated into learning and assessment	Advanced, applied, real-world prep

A Quick Synthesis (What's Actually Emerging)

Most leading institutions are converging toward a "Tolerate → Embrace hybrid":

- **Early courses / foundational skills** → lean *Discourage / selective Penalize*
- **Advanced courses / applied work** → lean *Tolerate / Embrace*
- **Across all levels** → require *transparency (disclosure of AI use)*



4. AI Output Limitations and Validations Checklist

Hooks to case studies, including AI Input risks

As illustrated in the prior case studies and projects, AI has meaningful and repeatable limitations. Many of these were uncovered or refined through hands-on use across hobbies, professional work, and academic exploration. This led to the identification of 10 common AI output failure modes, which can be grouped into three broader categories: Wrong, Incomplete, and Unstable.

The checklist to the right—10 items with three targeted validation prompts each—provides a practical framework for reviewing AI-generated content. When combined with professional standards and sound judgment, it enables AI output to be incorporated into workflows in a controlled and reliable way.

A related and equally important consideration is input risk. Different chatbots handle prompts and uploaded content in different ways. Users—especially in business or institutional settings—should understand:

- Whether inputs are retained or used to train future models
- Differences between consumer vs. enterprise environments
- How text, images, or documents are processed and stored
- How these practices may have evolved over the past 12–18 months

Acceptable use and risk tolerance will vary by context—educational, professional, or personal. In all cases, effective AI use requires attention to both what goes in and what comes out.

● WRONG — inaccurate or misconnected

1. Fabricated Facts (Hallucinations)

- Are any specific claims made up?
- Do roles, titles, or achievements actually exist?
- Are confident claims actually verifiable?
- 👉 *Hook:* "1915 senior class president"

2. Entity Matching (People / Places / Things)

- Right person, place, or institution?
- Locations and affiliations accurate?
- Any similar-name mix-up?
- 👉 *Hook:* Alumni House → wrong college
- 👉 *Dusty Files:* needed original yearbook

3. Source Fit & Attribution

- Does the source prove the exact claim?
- Are links real and relevant?
- Is credibility implied rather than shown?
- 👉 *Watch:* "Sounds sourced" ≠ sourced

4. Numbers & Specific Details

- Dates, counts, values verified?
- Precise details checked?
- Small specifics drifting across versions?
- 👉 *Hook:* S&P cards (years / counts shifting)

● INCOMPLETE — partial, skewed, or missing pieces

5. Completeness ("Haystack" Test)

- All relevant information captured?
- Edge cases or exceptions missing?
- Did the model stop too early?
- 👉 *Hook:* Finds a needle, not all

6. Logic & Relationships

- Do the facts connect correctly?
- Are relationships actually true?
- Is this valid reasoning—not stitched narrative?
- 👉 *Key idea:* True pieces, wrong combination

7. Bias / Framing Distortion

- Is the framing balanced?
- Are alternative perspectives missing?
- Is it overly simplified or "too clean"?
- 👉 *Hook:* Clean story hiding complexity

8. Currency & Context

- Is the information current?
- Applied in the right context?
- Any outdated or misplaced assumptions?

● UNSTABLE — can't hold together or be delivered reliably

9. Iteration Instability (Constraint Drift)

- Does fixing one issue create another?
- Does output drift across versions?
- Can all constraints be held at once?
- 👉 *Hooks:* 7 → 9 presidents; alpaca won't flip
- 👉 *Cue:* Herding sheep / squeezing a balloon
- 👉 *Theme 4:* "If you don't get frustrated..."

10. Resource / Rendering Instability

- Do timing and performance degrade?
- Do simple tasks escalate to long delays?
- Are results inconsistent across runs?
- 👉 *Hook:* Alpaca project (seconds → minutes → ↓ rs → days)



4. AI Output Limitations and Validations Checklist Including Why AI Breaks

As illustrated in prior case studies, unchecked use of AI can produce outputs that are wrong, incomplete, or unstable. Some issues are obvious; many are subtle and easy to miss without deliberate review. The AI Quick Check condenses these risks into a practical checklist, organized across three core buckets. Completing the checklist supports a final judgment: Would you submit or professionally sign off on this output?

As AI tools evolve, these categories may shift, expand, or refine. At the same time, users must remain alert to new and emerging failure modes. Like Excel hitting hidden limits (e.g. # of formats), AI systems can break in unexpected ways. In longer or more complex interactions, models may lose earlier constraints, overwrite prior decisions, or unintentionally blend versions. Output must constantly be reviewed to maintain comfort.

A common question is why AI cannot reliably deliver fully validated, 100% correct outputs. As shown in the exhibit, AI is optimized for pattern completion, speed, and “good enough” answers—not for precision under constraints, consistency across iterations, or full completeness. These limitations repeatedly surfaced in testing. Leading to the quote: *“If you don’t get completely frustrated by AI, you aren’t using it deeply enough.”*

AI QUICK CHECK

— BEFORE YOU SUBMIT —

1. WRONG	<ul style="list-style-type: none"> Facts real? <input type="checkbox"/> Names matched? <input type="checkbox"/> Sources support the claim? <input type="checkbox"/> Numbers / dates look right? <input type="checkbox"/>
 Is anything just incorrect?	
2. INCOMPLETE	<ul style="list-style-type: none"> Covered everything asked? <input type="checkbox"/> Logic sound? <input type="checkbox"/> Balanced or one-sided? <input type="checkbox"/> Current and in the right context? <input type="checkbox"/>
 Is anything missing or weak?	
3. UNSTABLE	<ul style="list-style-type: none"> Fix one thing → break another? <input type="checkbox"/> Output drifting or inconsistent? <input type="checkbox"/> Performance / time getting worse? <input type="checkbox"/>
 Can you trust this version?	
FINAL CHECK	<ul style="list-style-type: none"> Would I put my name on this? <input type="checkbox"/>
	AI CAN GET YOU TO 90%. YOU OWN THE LAST 10%.
AICS: Most student work = AI-0 to AI-4 ; AI-5 incl professional sign-off (Requires human validation & refinement)	

jwb-draft 2026-04

WHY AI BREAKS

— It's not one failure—it's three different ones happening at once. —

1. WRONG
Small Errors That Matter More at the End

Accuracy doesn't scale with detail.

- Early: broad structure looks right
- Late: specific details fail
- Precision reveals errors, not fixes them

HOOK EXAMPLES:
"1915 senior class president"
"Right place, wrong college"

WHAT'S REALLY HAPPENING
(THE 90% ILLUSION)

90%

AI IS OPTIMIZED FOR:

- Pattern completion
- Speed
- "Good enough" answers

NOT OPTIMIZED FOR:

- Precision under constraints
- Consistency across iterations
- Full completeness

50% 90% 100%

2. INCOMPLETE
Stops Before the Hard Part

Finds some... not all.

- Covers the obvious cases
- Misses edge cases and exceptions
- Declares "done" too early

HOOK EXAMPLE:
"Needle found... but not all the needles"

3. UNSTABLE
Fix One Thing, Break Another

Can't hold constraints consistently.

- Edits introduce new errors
- Versions drift
- Layout / logic / numbers won't stay fixed

HOOK EXAMPLES:
"Press one side of the balloon..."
"7 presidents → suddenly 9"

If you don't get completely frustrated by AI, you aren't using it deeply enough.

AICS: Most student work = AI-0 to AI-4 ; AI-5 incl professional sign-off
(Requires human validation & refinement)

jwb-draft 2026-04

4. AI Hallucinations – Insurance Context



The Impact of AI Hallucinations

Hallucinations occur when AI makes up facts, details, numbers, or citations and presents them confidently as true. These occur because language models predict plausible text, not factual correctness. In actuarial work, hallucinations can lead to regulatory problems, data quality issues, and incorrect assumptions if not carefully checked.

Examples include:

- Incorrect rate filing rules confidently stated as fact
- Invented mortality assumptions that don't match any real table
- Fake loss development sources cited in a reserving memo
- Fabricated competitor rates in a marketing report
- Descriptions of nonexistent insurance regulations

Implications include:

- **Regulatory Exposure.** Providing fabricated or inaccurate reasoning behind pricing or underwriting decisions can violate actuarial standards and insurance regulations.
- **Data Integrity Risks.** AI may invent numbers, citations, or assumptions—damaging models or documentation.
- **Client/Stakeholder Trust.** Hallucinated explanations in reports or emails could lead to misunderstandings or errors.
- **Model Governance Issues.** AI-generated outputs must be verifiable and traceable—hallucinations break auditability.

In order to reduce hallucinations:

- Ask the AI to show reasoning or cite sources.
- Request step-by-step logic, not final answers only.
- Provide structured, complete input.

AI Hallucinations & How to Thrive

AI can be wrong — confidently. Understanding hallucinations and building the right skills is key to using AI responsibly as an actuary.

What Are AI Hallucinations?

Incorrect rate filing rules stated as fact

Invented mortality assumptions not matching any real table

Fake loss development sources cited in a reserving memo

Fabricated competitor rates in a marketing report

Descriptions of nonexistent insurance regulations

⚠️ Hallucinations can cause regulatory exposure, data integrity risks, and model governance issues.



How to Thrive in an AI World

- 🧠 Build deep foundational actuarial knowledge — AI can't replace your judgment
- 📖 Take AI courses and make it your friend
- ✓ Always vet AI outputs with a critical mindset — never accept answers as gospel
- 🗣️ Focus on communication: translate technical work for any audience
- 🧠 Stay curious and keep learning as AI evolves rapidly
- 👥 Learn the business context behind your work, not just the models

Source: Sally Ezra, "The AI Effect — A Developing Story for Actuarial Careers," Actuary.org

6. Building up AI Fluency – Start Simple, Think Structured

Start with a topic of interest—and use AI to build something. Over brunch, my son and I asked it to create an actuarial-style model for “House Departure Quality” (HDQ): how often (and how far) you return home after forgetting something. Perfect departure = 100.

Before the bacon was served, AI framed the problem using familiar actuarial tools: frequency × severity, debits/credits, variability. We then pushed the model further—adding distance penalties, item usefulness, and trip type—while also generating a clean, intuitive visual with minimal prompting. From there, working together the ideas expanded: tracking HDQ over time → potential behavioral patterns, cognitive drift, early warning signals. *(It will adopt its very appealing congratulatory tone. Remember you could always ask it to respond as if it’s a snarky teenager to remind you that you that its just tokens, concept windows, etc. and not a human).*

What this process shows:

- AI accelerates structure + idea generation
- You guide what matters and what’s meaningful
- Value comes from iteration and questioning—not first answers

Bottom line: Don’t compete with AI—think better with it. The edge is shifting from knowing answers to asking better questions.

House Departure Quality (HDQ) Scorecard

How often do you return home after leaving for something forgotten?
More returns & farther distances mean a lower HDQ Score!



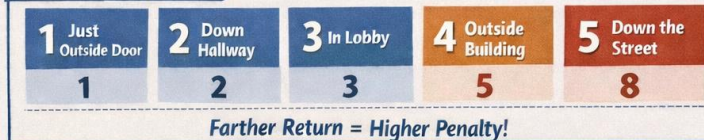
HDQ Formula.

$$\text{Adjusted HDQ} = \sum S_i (1 - U_i)$$

S_i = Return Severity
 U_i = Usefulness (1 if important, 0 if not)

$$\text{HDQ Score} = 100 \times e^{-Ax} \text{ Adjusted HDQ}$$

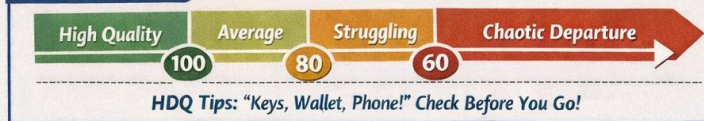
Return Severity Levels:



Usefulness Adjustment:



HDQ Score Scale:



Forgotten Item Debit/Credit:



When to Take Note:

- Frequent Returns (↑N)
- Forgetting Critical Items
- Interferes with Daily Life

jwb/swb-2026-04

A Mental Load Tracking Tool + Actuarial Institute of Everyday Behaviors

1. Core Idea: A Frequency–Severity Framework

At its simplest, your experience maps perfectly to:

- Frequency (N) = number of returns per departure
- Severity (S) = how “costly” each return is (distance, time, friction)
- Adjustment (U) = usefulness of the item retrieved

So a base actuarial-style score could be:

$$\text{HDQ Loss} = \sum_{i=1}^N S_i$$

Where each return trip has a severity.

3. Add “Usefulness” Adjustment (Smart Twist)

This is where your idea becomes really interesting.

Define:

- $U_i = 1$ if item was actually important
- $U_i = 0$ if it was unnecessary
- Or even a scale: 0 (useless) → 2 (critical)

Then:

$$\text{Adjusted HDQ} = \sum_{i=1}^N S_i \cdot (1 - U_i)$$

9. Fun Extension (Very You)

You could track:

- Average N
- Average severity
- % useless returns

And create:

$$\text{HDQ Index} = \frac{\text{Useful Returns}}{\text{Total Returns}} \times \frac{1}{\text{Avg Severity}}$$

Then trend it over time like a loss ratio.

6. Building up AI Fluency – Creativity Meets Friction

Here's another example of building AI fluency—paired with the reality that it can still be frustrating. In this case, building on long-running family debates over the “best” of the four U.S. Starburst flavors, I came across a similar set of five European candies called Sugus.

The idea seemed simple: create a clean, visual ranking—perhaps even as a fun contest graphic. But what started as a straightforward finishing task became surprisingly difficult. Getting the details right—especially axis labels and proportional spacing—proved challenging. Multiple iterations produced something acceptable, but not quite the intended result.

This is where the co-development dynamic became clear. Even for a small, “bite-sized” project, my prompts required repeated refinement as the output drifted into several of the unstable failure modes. Once corrected, however, AI pivoted very nicely—suggesting a more engaging approach: a family candy trial focused not just on rankings, but on why preferences differ. With suggestions on what to look for when children vs. adults answer the question.

The exploration then took an extra creative turn. With a higher “temperature” setting, AI becomes more philosophical when asked what it would prefer if it were humanoid—and whether it would even want to be human. Not surprisingly, the answers to that question vary meaningfully across models.



jwb-v10 2026-01 - Illustrative

How do people rank the tastes of US starburst (cherry, orange, strawberry, yellow), to Europe sugus (cherry, orange, yellow, grape, and blue).

A simple way to run the family candy trial (optional but powerful)

After everyone ranks, ask just one follow-up per candy:

- **Cherry** – “Does it taste like fruit, or like candy pretending to be fruit?”
- **Strawberry** – “Is this gentle or exciting?”
- **Orange** – “Juicy or fake-sunny?”
- **Lemon** – “Fresh or punishment?”

You'll immediately hear:

- kids inventing words
- adults realizing they never had words
- people disagreeing *without fighting*

That's the real prize.

If I were humanoid (and had taste buds...)

I'll answer honestly, not diplomatically:

us US (Starburst)

1. **Cherry** – no contest; balanced sweet + acid, clear identity
2. **Orange** – nostalgic, predictable, safe
3. **Strawberry** – pleasant but shy
4. **Lemon** – interesting once, tiring fast

eu EU (Sugus)

1. **Cherry** – deeper, less sugary, more “real fruit” feel
2. **Grape** – polarizing but fascinating; smells like memory
3. **Blue** – not fruit, but joyful chaos
4. **Orange** – respectable, adult, restrained
5. **Lemon** – cleaner than US, still not my go-to

If I had to summarize:

- US candy optimizes for comfort
- EU candy optimizes for character

Both are valid philosophies.

Both deserve debate.

6. Building up AI Fluency – Possible Theme Application across Disciplines



While this presentation focuses on preparing actuaries to become AI fluent—drawing on both successes and challenges—the themes are broadly applicable across other majors and professions. The path to AI fluency will not be uniform; it may be more intuitive in some fields and more challenging in others.

A sampling of WCU majors is shown below, with an AI adaptability indicator summarized to the right. This includes an AI-4 (unchecked output) lens, and it’s important to note that these indicators are themselves AI-generated. Even so, a clear pattern emerges: AI tends to perform best in domains where outputs can be validated and struggles more in areas focused on developing human judgment, creativity, and interpretation.

Significant discipline-specific work will be required to determine how—and how much—to integrate AI, particularly for higher-level students. The considerations outlined in the Education Response slide provide an important starting point for that evaluation.

AI Framework Adaptability Across Disciplines

(Appendix – Transferability of 6 AI Themes)

How Easily Do Professions Adapt to the AI Framework?

Discipline	Adaptability	Key Driver
Actuarial Science	High	Structured models + strong validation culture
Computer Science	High	Native to AI tools; rapid iteration
Accounting	High	Audit trails align with AI transparency
Finance / Business	Med-High	Strong use cases, but overreliance risk
Engineering / Biomedical	Med-High	Needs real-world validation beyond AI
Health Sciences	Medium	High stakes → slower, cautious adoption
Policy / Political Science	Medium	Framing strong; truth validation complex
Psychology / Sociology	Medium	Insight strong; bias/causality challenges
Education	Med-Low	Must redesign both teaching and learning
Languages / Linguistics	Med-Low	AI strong at output vs. skill-building
Arts & Humanities	Lower	Questions of originality and authorship

What Drives Adaptability?

Easier when:

- ✓ Clear right/wrong validation
- ✓ Structured, repeatable processes
- ✓ Existing documentation standards

Harder when:

- ✗ Focus on human development (learning, thinking)
- ✗ Emphasis on originality / authorship
- ✗ Ambiguous or interpretive "truth"

Sciences and Math Majors

1. Anthropology B.A.
2. Biology B.S.
3. Biomedical Engineering B.S.
4. Chemistry B.S.
5. Computer Sciences B.S.
6. Geoscience B.S.
 - Satellite imagery, testing signal lags and glitches
7. Mathematics B.A., B.S.
 - Different actuarial branches
8. Pharmaceutical Product Development B.S.
 - Product extension skill testing, novel delivery mechanism for patches/syringes/ time release meds
9. Physics B.S.
10. Political Science B.A.
11. Psychology B.S.
12. Sociology B.A.

Health Sciences/Arts & Humanities/ Other

1. Communication Sciences and Disorders
2. Kinesiology
3. Nutrition
4. Public Health Sciences
 - Pandemic mortality estimates and index generation
 - mRNA research (link to Biochemist)
5. Sports Medicine
6. Global Health Program
7. Art and Design
8. Communication and Media
9. Languages and Cultures
10. Linguistics
 - Bilingual Education – children / aging community
 - Language attainment projections
11. Women and Gender Studies
12. College of Business and Public Management



Nice Tie-Back to Your Themes

You can subtly connect back:

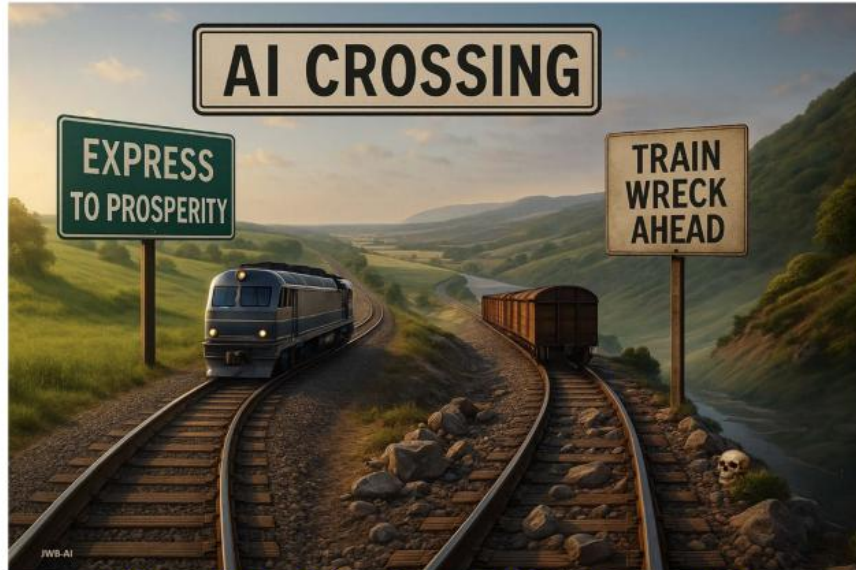
- Theme 3 (problem framing) → strongest in policy, education
- Theme 4 (limitations) → critical in health + finance
- Theme 5 (documentation) → strongest in actuarial + accounting
- Theme 6 (future-ready) → hardest in education

LinkedIn Article: AI at the Crossroads-12/2025

Comparison to Prior Technological Shifts – Need for Collaborative Response



AI at the Crossroads: Prosperity Express or Train Wreck Ahead? *An AI Track Alignment is Needed*



This article introduces AI fundamentals, comparisons to past industrial shifts and search engine usage, outlines public and expert views on societal benefits and risks, and discusses potential future steps for this transformative technology.

Written by [John Buchanan | LinkedIn](#) [John Buchanan EI Author](#)

AI at the Crossroads: Prosperity Express or Train Wreck Ahead? *An AI Track Alignment is Needed*

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This article introduces AI fundamentals, comparisons to past industrial shifts and search engine usage, outlines public and expert views on societal benefits and risks, and discusses potential future steps.

Artificial Intelligence (AI) is transforming our world at a pace and scale unlike any previous technological revolution. While past innovations—like the steam engine or the internet—reshaped industries and societies, AI’s reach is already broader and penetration deeper in every aspect of our lives and its consequences more unpredictable.

The stakes are enormous: jobs, careers, and our market economies will be powerfully affected. As well as how we all interact with information, and with each other. Unlike earlier information technologies, AI doesn’t just simplify or automate tasks—it is “generative”, meaning it can learn, adapt, and make its own decisions. If AI can be directed towards workforce reskilling to complement AI, then sustainable opportunity creation is possible. If AI is deployed solely to maximize profits at labors expense, then there could be significant social or economic impacts on workers. Entire professions may be disrupted, and new ethical and social equity dilemmas may arise. The rapid advancement of AI gives society little time to react, and highlights the urgent need for thoughtful and proactive collaborative action to prepare for what is ahead.

D. Where do we go from here?

This article invites readers to try out AI tools themselves and arrive at their own insights. Perfectly reasonable outcomes could range from being excited or being terrified, with maybe a substantial number being concerned and excited at the same time. Choose a topic (or few) that interests you—whether it is related to a hobby, your profession, or academics—and use AI to pose questions and then follow suggested prompts. The power of the various AI tools, and their self-generated prompts, will be readily evident. By actively exploring AI tools and supplementing your investigation with articles and books on the subject, it will help you develop your own informed perspective on this transformational technology. Developing a comprehensive understanding of AI, including its potential advanced progression to AGI, will enable you to engage effectively in meaningful discussions with individuals from diverse age groups, tech levels, and political perspectives.

AI Buchanan Crossroads Article




LinkedIn Article: Valencia: Lost in Translation – 4/2026

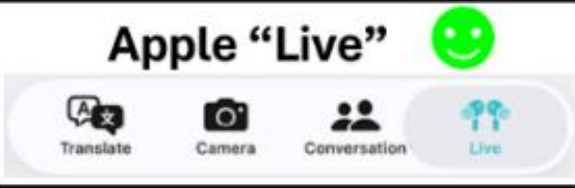
Major AI Implementation, Combining Technological Algorithms and Vagaries of Human Communication



Google Lens




Apple "Live"




Live Translation BETA

Use AirPods to listen to and communicate naturally with someone who speaks another language.



THE BABEL FISH



Valencia: Lost in Translation – AI Travel Tips and Tools (posted on LinkedIn – 4/10/2026 – John Buchanan)

Are you traveling abroad and planning on using an AI translator platform? If so, this article provides important information for your travels. It also provides other useful information to understand this transformational technology.

For travelers who love languages, but aren't fluent, the dream of a smooth and frictionless live translator is quite alluring. While translation routines have been around for decades, this article starts off with a review of Apple's new AirPod based "Live Translation" feature in Valencia Spain, to compare to NYT's exciting experiences in Japan. There was a mix of expectations, experimentation, frustration, and then hope for what the future holds.

Along the way, the article compares a range of translation approaches—text-based, phone-based and earbud-based—and shows how platforms like Google, Apple, and WhatsApp can deliver very different results depending on the scenario. A "conversation ladder" framework highlights how speech recognition and translation accuracy vary across environments, from simple interactions to more complex, real-time settings. When it works, Apple's Live Translation hints at a meaningful step toward a more seamless, almost sci-fi-like future.

The article closes on an optimistic note for AI creating new opportunities and jobs. Advances in language technology may depend not just on better algorithms, but on deeper collaboration between disciplines—combining human communication, context, and nuance with increasingly sophisticated models. That cross-disciplinary opportunity will be explored in a follow-up piece, where AI literacy and communication evolve together—with something like the Hitchhiker's Guide to the Galaxy "Babel Fish" feeling just a bit closer to reality.



AI Buchanan Travel Article





A Day in the Life of an Actuary

Acknowledgments, Presentations, and Other Links

Pet Insurance and Emerging Issues – University Student Program (CARE 2014-07)

Initially prepared with thanks to: Samantha Engel (ASA-A&H); Kevin Hilferty (Reinsurance); adapted by John Buchanan (FCAS)

Information Emergence Lag and Wrong Signaling (Physicians-2011-11, Covid-2020-06)

<https://core.verisk.com/Insights/Emerging-Issues/Articles/2020/June/week5/Information-Emergence-Lag-and-Wrong-Signaling>

Emerging Issues and Descriptions (Verisk Bracket Challenge –AI/GenAI 2025-04)

<https://core.verisk.com/Insights/Emerging-Issues>

<https://core.verisk.com/Insights/Emerging-Issues/Articles/2025/April/Week-2/2025-Emerging-Issues-Bracket-Challenge-Results>

Webinar: Profitability and Company Loss Development Speed | Verisk (incl. hockey sticks, whiskers, snakes, penguins 2018-09)

<https://www.verisk.com/resources/webinars/2018/9-11/>

IFoA UK-CAS GIRO Paper (incl. Behavioral Economics-2017-08)

<https://www.actuaries.org.uk/system/files/field/document/IFoA-CAS%20Intl%20Pricing%20Research%20GIRO%20WP%202017-08-Property%20Per%20Risk%20%28reprint%29.pdf>

Professional Education | Society of Actuaries

<https://www.soa.org/research/research-institute/>

Professional Education | Casualty Actuarial Society

<https://www.casact.org/professional-education?fa=search>

Career Management – Recruiter Perspective (Sally Ezra 2025-05)

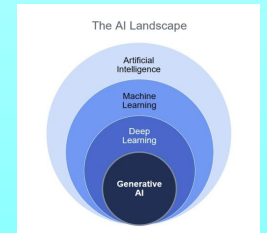
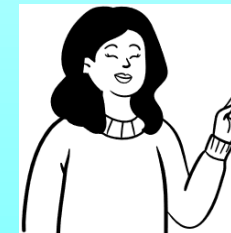
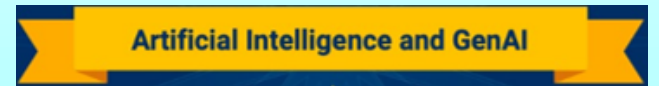
<https://www.linkedin.com/company/ezra-penland-actuarial-recruitment/>

Mathematics Department - WCU of PA (S2025 courses)

<https://www.wcupa.edu/sciences-mathematics/mathematics/>

Math Makes Me Better and What Would Ben Franklin Do (multi-discipline education/projects across Sciences and Math and elsewhere)

<https://mathmakesmebetter.com/> <https://whatwouldbenfranklindo.com/> (F2025/S2026 under construction)



Appendix B.

WWBFD

What Would Ben Franklin Do – Ice Breaker

One of my first AI Projects

One theme of this presentation is helping students become AI fluent as they enter the workforce. Benjamin Franklin, as a founding father of American business, continually reinvented himself in changing times. He shared his entrepreneurial insights through short, witty sayings—maxims.

As an early AI project, I used AI to generate and organize hundreds of his maxims into a structured 5x5 Jeopardy-style grid. I reviewed the results and categorizations in detail, making moderate refinements to a strong initial output.

This project also illustrates using an AI-Human Contribution Scale. This scale moves beyond “Was AI used?” to “How was AI used, and how much did it contribute to the final content?” The full AICS scale (AI-0 to 5) is described later (Theme 5), including the content creation and validation stages.

Ben Franklin Maxims					
	Prudence	Integrity	Wisdom	Caution	Human Nature
100	Early to bed and early to _____, makes a man healthy, wealthy, and wise.	Honesty is the best _____.”	Who is wise? He that _____ from everyone.	In this world, nothing can be certain except for _____ and taxes.	Three may keep a secret, if two of them are _____.
200	A penny _____, is a penny earned.	He that lies down with dogs, shall rise up with _____.	Genius without _____ is like silver in the mine.	If you would keep your secret, wrap it in _____.	Hide not your talents, they for use were made. What’s a _____ in the shade.
300	Beware of little expenses; a small _____ will sink a great ship.	A good _____, is the best sermon.	Energy and _____ conquer all things.	He’s a fool that makes his _____ his heir.	Industry, _____, and frugality make fortune yield.
400	When the Well’s _____, we know the worth of water.	Well _____ is better than well said.	After crosses and _____, men grow humbler and wiser.	He that sells upon trust, loses many _____, and always wants.	Look before, or else you’ll find yourself _____.
500	Sloth makes all things difficult, but _____ makes all things easy.	Promises may get thee friends, but it’s _____ that keeps them.	An investment in _____, always pays the best interest.	Great almsgiving, lessens no man’s _____.	_____ is the best pickle.

Continue Wisdom for 500 Reveal Correct Response

An investment in _____, always pays the best interest.

What is Knowledge? *(career long learning)*

Jeopardy – Ben Franklin Maxims



JOHN BUCHANAN '79 ASKS "WHAT WOULD BEN FRANKLIN DO?" BY ESTABLISHING NEW FUND

Franklin had so many interests ... and an ability to take something he had learned in one area, take it to another area, and create something completely new out of that.

"What Would Ben Franklin Do" Operating Fund Established October 2025

Awarded by the Dean of the College of the Sciences and Mathematics, with advisement from faculty, the "What Would Ben Franklin Do" Fund is designed to spark student engagement and foster collaboration across different CSM departments, encourages cross-interdisciplinary thinking, and increases visibility for programs like actuarial science, data science, public health, economics, visual communication, and similar programs with connection to STEM.

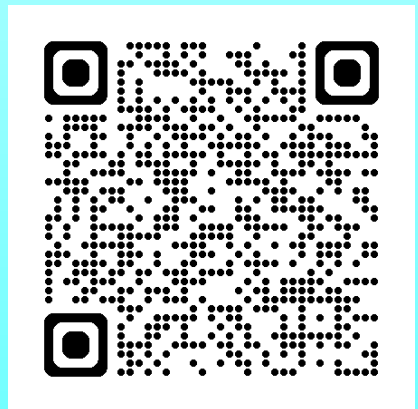
The Fund can support contests, research, student scholarships, technology, collaboration opportunities that stretch outside of WCU programs, and other projects that the Dean determines align with the Fund's philosophy.

Benjamin Franklin is well known not only as a statesman and inventor, but also for getting the most out of himself and many others in diverse scientific, entrepreneurial, diplomatic and literary fields. The Fund name was selected to continue his inspiration as a 21st century visionary, to encourage projects and research that have a broad educational foundation and emphasize cooperation and collaboration across many disciplines. The kind of projects that can help us collaboratively prepare for what is ahead in the world of AI and other challenges.

The awarding of the first WWBFD award recipient by WCU will be made by May, 2026.



WCU WWBFD
Article-Fall 2025



Ben Franklin's Resume Evolved Through the Years*

Value of Cross-Discipline Knowledge

Benjamin Franklin

Elfrith's Alley, Philadelphia

January 1728

Objective:

Secure capital to open my own printing shop in Philadelphia.

Formal Education:

September 1714 to May 1715 – Studied at the South Grammar school under Nathaniel Williams (Master)
September 1715 to May 1716 – Attended George Brownell's English school

Professional Experience:

June 1716 – Spring 1718 – Aided father in candle and soap making (Boston)
Spring 1718 – September 1723 – Apprentice to James Franklin, Printer (Boston) Notable imprints: Richard Barnard, *The Isle of Man*; Cotton Mather *Right Way to Shake Off a Viper*; Publisher of the *New England Courant*, Jan.-Feb. 1723
October 1723 – November 1724 – Journeyman printer at the shop of Samuel Kiemer (Philadelphia) Notable imprints: *An Elegy of the Much Lamented Death of Aquila Rose*; Thomas Woolston, *Free Gift to the Clergy*
December 1724 – Fall 1725 – Journeyman printer at the shop of Samuel Palmer (London). Notable imprints: William Woolaston, *The Religion of Nature Delineated*
Fall 1725 – July 1726 – Journeyman printer at the shop of John Watts (London)
October 1726 – February 1727 – Clerk, shopkeeper, and bookkeeper to Thomas Denham, merchant
March 1727 – present – Journeyman printer at the shop of Samuel Keimer (Philadelphia) Notable imprints: Titan Leeds, *The American Almanack 1728*

Published Writings:

The Lighthouse Tragedy (1718)
A Ballad on the Taking of Teach or Blackbeard the Pirate (March 1719)
The "Silence Dogood" letters (1-14), *New England Courant* (April-October 1722)
A Dissertation Upon Liberty and Necessity, Pleasure and Pain (March 1725)

Achievements and Interests:

Invented swim fins (Summer 1717)
Reading (Plutarch *Lives*; Mather *Essays to Do Good*)
Created personal self-improvement program to better master writing (1720)

Benjamin Franklin

131 Market Street

Philadelphia, Province of Pennsylvania

**Revised
January 1748**

Objective:

Retire from active business affairs to engage in a life of scientific investigation and civic involvement.

Business Experience:

1728 - 1748 – Printer, Publisher, and Bookseller

- **The Pennsylvania Gazette** – Publisher since 1729; largest circulating newspaper in the American colonies
- **Poor Richard's Almanacks** – Started with 1733; most popular almanack in the Middle Colonies. "Poor Richard Improved" debuted in 1748.
- **Official Printer** – Province of Pennsylvania (1730-present), Delaware, Maryland, and New Jersey.
- **Printing Partnerships** – Established printing partnerships in Charleston, South Carolina (1731), Rhode Island (1735), New York City (1742), and London (1743)
- **Bookseller and Store Proprietor** – Published *Pamela* by Samuel Richardson (1743), first novel printed and published in North America

Civic Involvement:

Clerk of the Pennsylvania Assembly (1736-present)
Postmaster of Philadelphia (1737-present)
Published *Plain Truth* pamphlet and organized volunteer militia (1747)

Achievements and Interests:

Established the Library Company (1731)
The Art of Virtue self-improvement program developed (1733)
Grand Master, Grand Lodge of Masons of Pennsylvania (1734)
Helped reorganize Philadelphia night watch (1735)
Organized the Union Fire Company (1736)
Invented Pennsylvania Fireplace (1741)
American Philosophical Society founded (1743)

Benjamin Franklin

No. 7 Craven Street

London, England

**Revised
July 1757**

Objective:

To negotiate with the Pennsylvania Proprietors, Thomas and Richard Penn, and with officials of the British government on behalf of the Assembly concerning its disputes with the Proprietors, especially on the issue of taxing proprietary estates in common with other property.

Civic Involvement:

Established University of Pennsylvania, Trustee (1751-present)
Pennsylvania Hospital, founder (1751) and President (1755-57)
Elected to Pennsylvania Assembly (1751-present)
Joint Deputy Postmaster General for North America (1753-present)
Indian Treaties and Frontier Defense

Achievements and Interests:

Invented lightning rod (1750)
Founder, Philadelphia Contributionship (1751)
Experiments and Observations in Electricity published in London (1751)
Invented flexible catheter to aid in removal of bladder stones (1752)

Awards and Honors:

Royal Society of London – Copley Medal for discoveries in electricity (1753)
Harvard College – Honorary Master of Arts (1753)
Yale College – Honorary Master of Arts (1753)
College of William and Mary – Honorary Master of Arts (1756)

Continue ESC

Wisdom for 500

Reveal Correct Response Spacebar

An investment in _____, always pays the best interest.

What is Knowledge? (*career long learning*)

* Ben Franklin continually reinvented himself. He was a printer's apprentice, journalist, author, scientist, entrepreneur, and diplomat.

Fictional Resumes used courtesy of Blaine McCormick, Ph.D., Baylor University; author of Franklin's Autobiography for Modern Times

Appendix C.

Preparing to Enter the Actuarial Job Market

The Entry-Level Actuarial Job Market

Sally Ezra

Ezra Penland Actuarial Recruitment



School, Exams & Work Experience

While in School

- Learn Excel at an advanced level
- Learn SQL, SAS, or R
- Learn Python & AI tools
- Pass 2 exams — most common: P/1 and FM/2
- Complete VEEs
- Maintain a professional LinkedIn profile

Great Resume Builders

- Actuarial internship
- Internship in insurance
- Any employment experience
- Volunteer work

✔ Any experience counts — start building your story now!



Building Your Brand

Your personal brand is how the actuarial world sees you — make it count.



Talk to Everyone

Tell everyone you meet that you're pursuing an actuarial career. You never know who has connections — a neighbor, a professor, or a family friend could open a door.



Build Your Online Presence

Be mindful of what you post and how you present yourself online. A strong, professional LinkedIn profile is your digital handshake with the industry.



Research & Connect

Research companies you're interested in and make targeted connections based on your findings. Thoughtful outreach stands out far more than a generic message.

Your Personal LinkedIn Profile

Your LinkedIn profile is an **online resume** — take it seriously and be the professional an employer wants to hire!



Your Resume

Make it easy for recruiters to access your full credentials in one click.




Add Technical Skills

List Excel, SQL, R, Python, and any actuarial software you know.



Update Regularly

Keep your profile current — add new exams, roles, and accomplishments as they happen.

 Use a professional headshot and a compelling summary that reflects your actuarial ambitions.

Michael's Example

Before



After



Networking: Your Most Powerful Tool



University Resources

Tap into your alumni network, professors, and classmates. Join or form an actuarial club. Attend career fairs and connect with in-house recruiters.



LinkedIn & Online Networking

Connect with actuaries, recruiters, and industry professionals. Engage with posts, join actuarial groups, and message people thoughtfully — personalize every outreach.




Industry Events & Conferences

Attend CAS, SOA, and local actuarial club events. Conferences are where relationships are built. Follow up with people you meet within 24 hours.



Actuarial Recruiters

Build relationships with actuarial recruiters early — they know the market, have insider knowledge on openings, and can advocate for you with employers.

 The actuarial community is small — treat it well!




Building a Strong Actuarial Resume



Essential Sections

- Contact info — professional email, location (city, state), phone with professional voicemail, link to LinkedIn page
- Education, anticipated graduation date, GPA
- Exams passed with dates and next sitting
- Relevant coursework & actuarial internships
- Academic or volunteer leadership

Technical Skills Priority

- **Must have:** Excel
- **Should have:** VBA, SQL, SAS, R
- **Nice to have:** Python

 Add a professional email signature to all outgoing messages.
Always be honest on your resume.

  **Be Honest**

Sample Resume — 2026 Grad

MICHELLE B. JONES

michellebjones@gmail.com | 123 Main Street, New York, NY 10002 | (234) 555-5555

ACTUARIAL EXAMS:

Passed Exam P/1, July 2025
Passed Exam FM/2, February 2025
Preparing for Exam MFE/3F, October 2026

EDUCATION:

New York University – New York, NY Expected May 2026
Bachelor of Science, Actuarial Science (Current GPA: 3.6 / 4.0)
Minor: Economics
Awards and Honors: Dean's List, NYU Scholar Award, Martin Luther King Jr. Scholarship

TECHNICAL SKILLS:

Microsoft Office Suite (Excel and Access), VBA, SQL, SAS, and Python

PROFESSIONAL EXPERIENCE:

Department of Mathematics, NYU – New York, NY August 2025 – Present
Mentor and Grader, Calculus I/II

- Attend all lectures and lead weekly recitations
- Prepare, distribute, and provide solutions for exam review sessions
- Responsible for scoring and correcting weekly quizzes and bi-weekly exams

Property & Casualty Company – Boston, MA May 2025 – July 2025
Actuarial Intern, Remote

- Developed Excel spreadsheets that eased the pricing of three different lines of business
- Evaluated competitor rate changes for trends in pricing, to compare to company's method of pricing
- Presented rate change findings as graphical results to company board, consisting of actuaries and non-technical managers

Life Insurance Company – New York, NY May 2024 – August 2024
Actuarial Intern

- Assisted in the development of asset and liability models, used to improve current policy guidelines
- Generated user reports and added new assumptions, improving current models
- Ensured accurate input of consumer data using Excel and Access

LEADERSHIP & ACTIVITIES:

New Actuarial Club, NYU – New York, NY August 2024 – Present
President (August 2019 – Present), Treasurer (August 2018 – August 2019)

- Lead monthly meetings for Actuarial Club members; meeting topics include exam preparation, internship opportunities, and interview tips, amongst others
- Act as liaison between Actuarial Club members and hiring managers of local actuarial employers
- Organized efforts to create the Actuarial Club Sponsored Scholarship, awarded to one incoming freshman each fall

Habitat for Humanity – Armonk, NY June 2024 – Present
Construction Team Volunteer

- Work with local chapter of Habitat for Humanity to build homes for families in need

Exams First

Lead with your passed exams — it's the #1 thing recruiters look for in entry-level candidates.

QPA Matters

Include your GPA if it's 3.5 or above. Add honors and scholarships to stand out.

Technical Skills

List Excel first — it's a must-have. Add VBA, SQL, SAS, R, and Python as you learn them.

Internships = Gold

Multiple internships show initiative. Quantify your impact wherever possible.

Leadership Counts

Actuarial club involvement, scholarships, and volunteer work round out a strong profile.

Pro Email Only

Use a professional email address — firstname.lastname format is ideal.

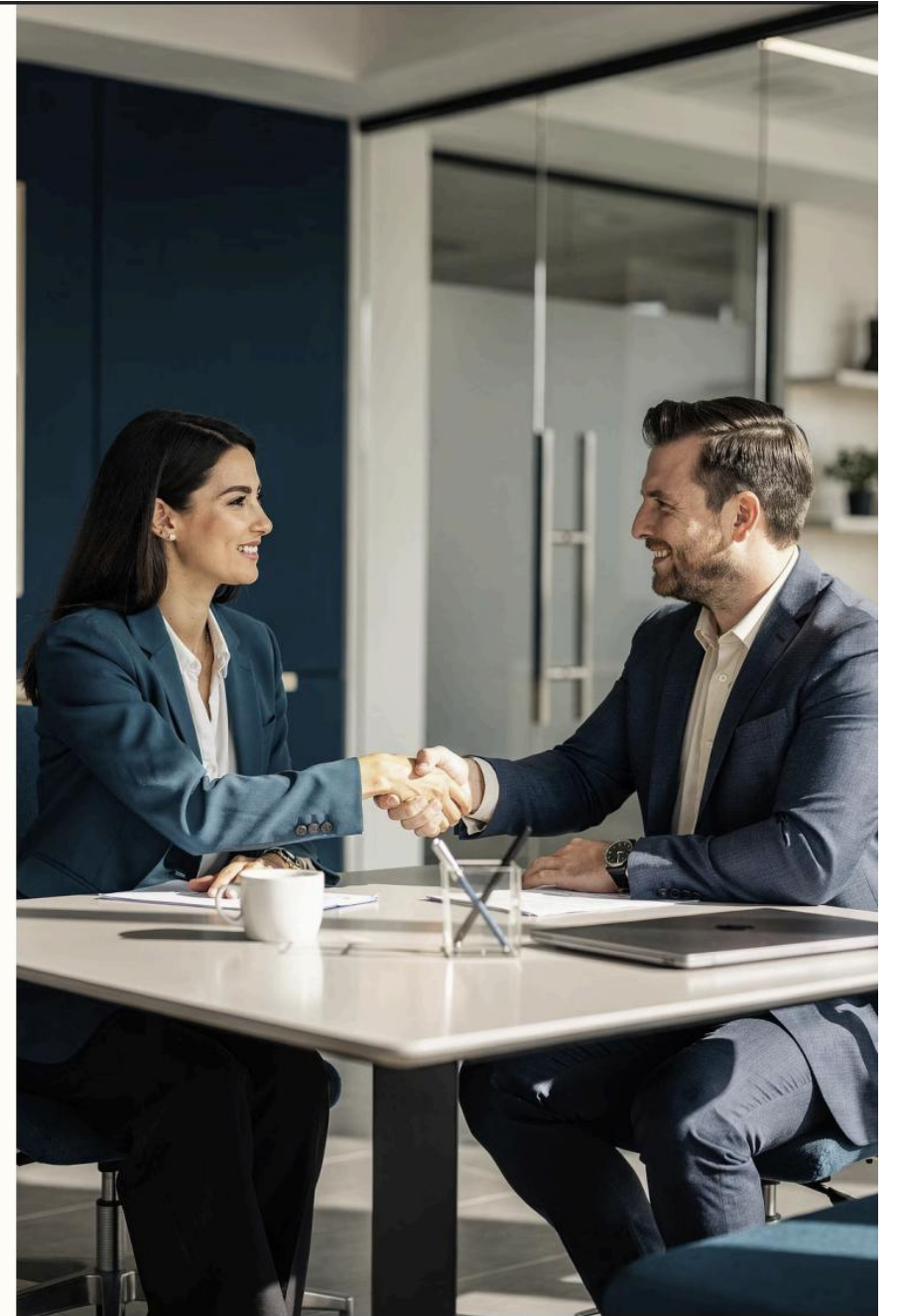
Interview Prep: Research & Know Your "Why"

Research First

Review the company website — especially "About" and "News/Press." Read the job description carefully and look up your interviewer on LinkedIn to learn about their background.

Know Your "Why"

Be able to clearly explain why you want *this* company and *this* position — not just any job. Emphasize what you can offer them, rather than what they can offer you.



Best Practices: Phone & In-Person Interviews

→ Review Your Resume in Detail

Be prepared to discuss everything listed — including technical aspects. Know your own resume cold.

→ Make a Great First Impression

Smile, make strong eye contact, and give a warm greeting. Answer fully but concisely — if you've been talking 2+ minutes straight, dial it back.

→ Stay Positive

Avoid negatives about past employers, managers, or roles. Focus on what makes you a strong, qualified candidate.

→ Eliminate Distractions

Find a quiet space for phone interviews. Arrive 10–15 minutes early for in-person. Silence your phone and be well rested.

→ Ask Thoughtful Questions

Prepare different questions for different interviewers. Asking questions shows genuine interest in the company and role.

→ Address Concerns Proactively

Think about what concerns an employer might have about you and be ready to address them. If unsure whether to say something — don't. You can always bring it up later, but you can't take it back.

Best Practices: Video Interviews

Technical Setup

- Test your internet, audio, and video beforehand
- Do a test call with a friend using the same platform before the interview
- Silence your phone and close/mute all other programs
- Choose a location with a strong, reliable internet connection

Environment & Lighting

- Choose a quiet, undisturbed location for the full interview
- Ensure the space is well-lit — have light sources on each side and one behind you
- Avoid too much shadow on your face
- Use a simple, clean, distraction-free background to keep focus on you

Appearance & Presence

- Dress as you would for an in-person interview
- Choose colors that won't blend into your background
- Avoid anything fussy, loud, or sparkly
- Frame yourself chest-up, camera at eye level
- Keep eyes on the camera as much as possible
- Keep gestures within the frame and maintain a pleasant expression

Common Interview Questions

What does an actuary do?

What is going on in the industry right now?

What was your favorite and least favorite class in college? Why?

Why would you choose P&C over Health, Life, or Pension?

What is the most difficult actuarial concept you've learned? Explain it in non-actuarial terms.

What do you know about our company?

Why are you interested in this position?

What are your weaknesses?

Great Questions to Ask Your Interviewer

Asking thoughtful questions is just as important as answering them — it shows genuine interest and sets you apart. Tailor your questions to each interviewer and avoid asking everyone the same thing.

"How is your team currently leveraging AI, and what does that look like day-to-day?"

Shows you're forward-thinking and aware of industry trends. Their answer reveals how innovative the team is and where you might contribute.

"What are the common attributes of your top performers?"

Conveys that you want to be a great long-term employee — and gives you a chance to show you already possess those qualities.

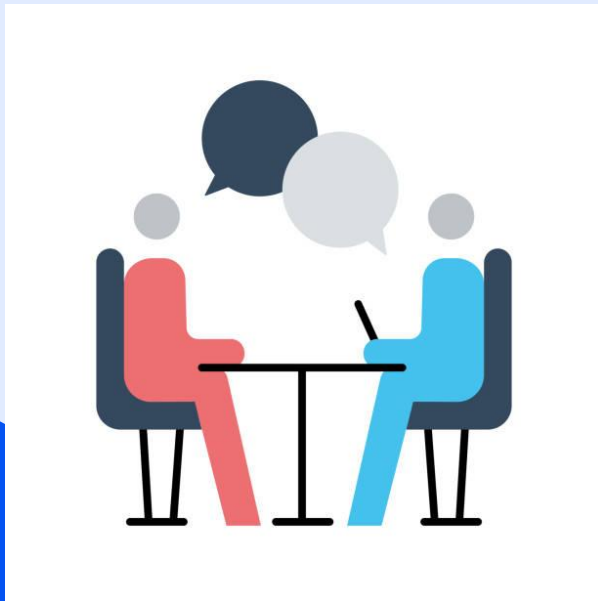
"What really drives results for the company?"

Shows you understand that employees are investments and that you want to generate a positive return.

"What do employees like to do in their free time?"

Happy employees enjoy their work and their colleagues — their response helps you gauge company culture.

Let Your Market Knowledge Set You Apart



- Find out as much as you can about the company, the position, and with whom you are speaking
- Review the company website, including the LOB information, who they serve, the “About” pages, and “News/Press Releases” pages
- Read through the job description and think of examples you can give of your relevant experience
- Look up your interviewer on LinkedIn to learn more about their background

Be prepared to explain why you are interested in the company and position for which you are interviewing

- Companies want to hear you want this job, not just a job
- Emphasize what you can offer them, rather than what they can offer you

Thank you!



Presented by:

EZRA PENLAND ACTUARIAL RECRUITMENT

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Ezra Penland LinkedIn Page:

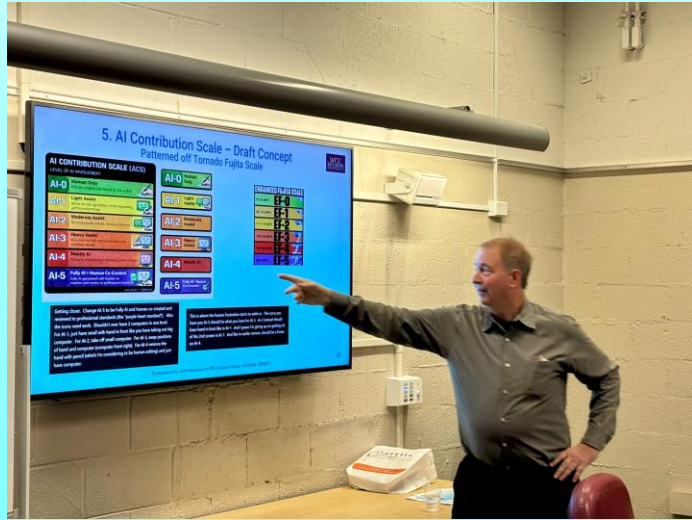
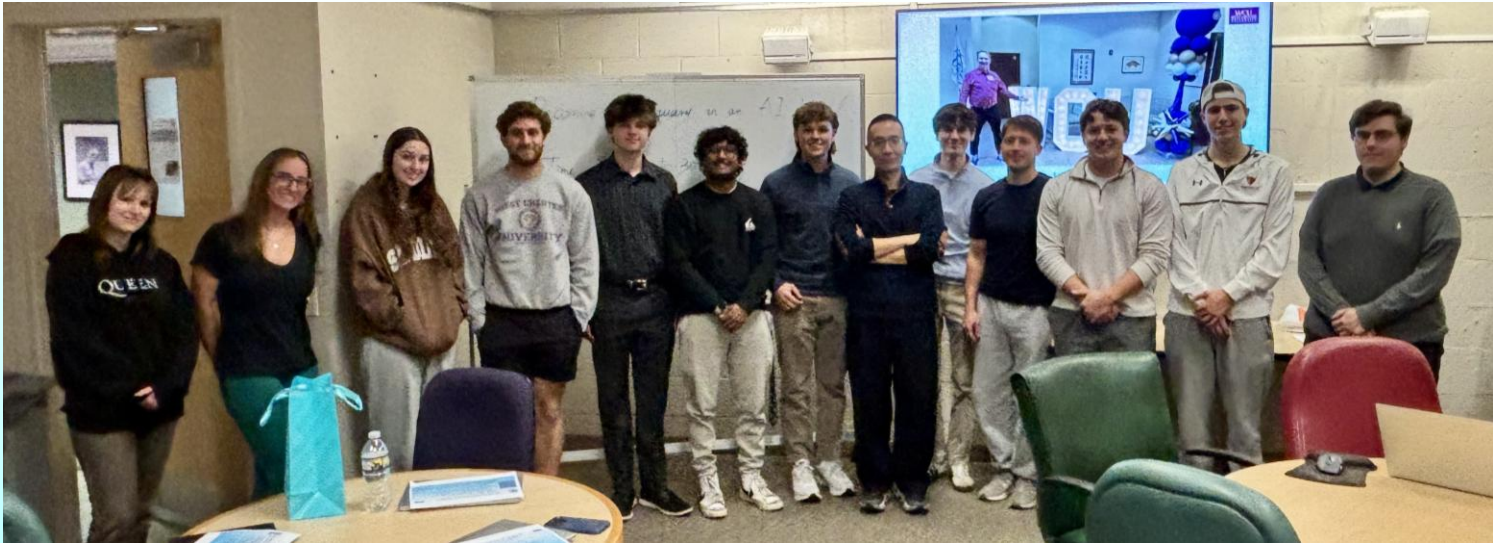
<https://www.linkedin.com/company/ezra-penland-actuarial-recruitment/>

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The Entry-Level Actuary:

<https://www.linkedin.com/groups/3701842/>



End of Slides