Asian Actuarial Conference

2025 Bangkok

How to Cut Through the Hype to get to Practical Solutions

12 Nov | 16:40 – 17:20

Roosevelt Mosley Jr.

FCAS, MAAA, CSPA

Managing Principal | Casualty of Actuarial Society

Platinum sponsors

Swiss Re, PartnerRe, RGA

Gold sponsors

Society of Actuaries, SCOR The Art & Science of Risk, Milliman, Munich RE, Institute and Faculty of Actuaries, AON, Canada Life Reinsurance, KPMG

Silver sponsors

Actuaries Institute, CAS Casualty Actuarial Society, Gen Re, เมืองไทย

Exhibitor sponsors

Pacific Life Re, AKUR8, Moody's, FIS

Media & Supporting event partners

Asia Insurance Review, actuview

Outcome Focused AI – How to Cut Through the Hype to Get to Practical Solutions

Asian Actuarial Conference 2025

12 November 2025

Roosevelt C. Mosley, Jr., FCAS, MAAA, CSPA

Managing Principal

Outcome Focused AI

- Definition of AI
- What AI Means for Actuaries
- Applications of AI
- Risks of AI
- Opportunity of AI

Definition of AI

Terms can be Misleading

Various Definitions of AI

- **Oxford Dictionary**: the capacity of computers or other machines to exhibit or simulate intelligent behaviour

- **IBM**: artificial intelligence is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy

- **Wikipedia**: capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals

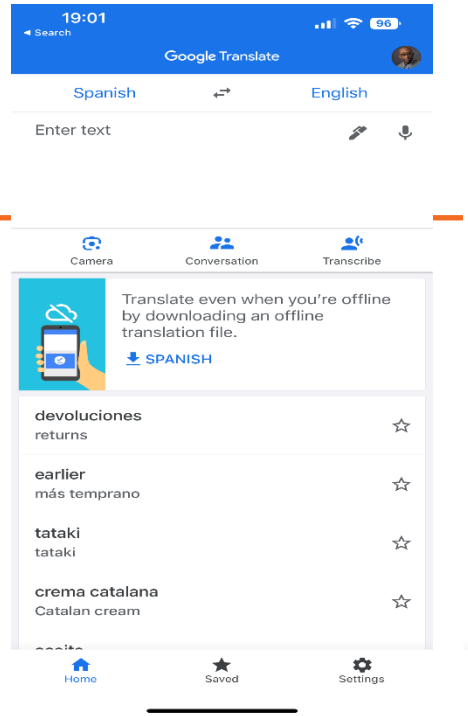
- **SAS**: Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks

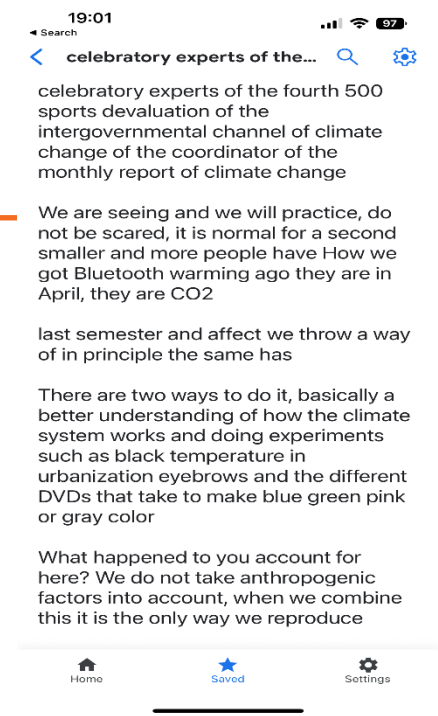
Key Components of the Definition of AI

Analytics

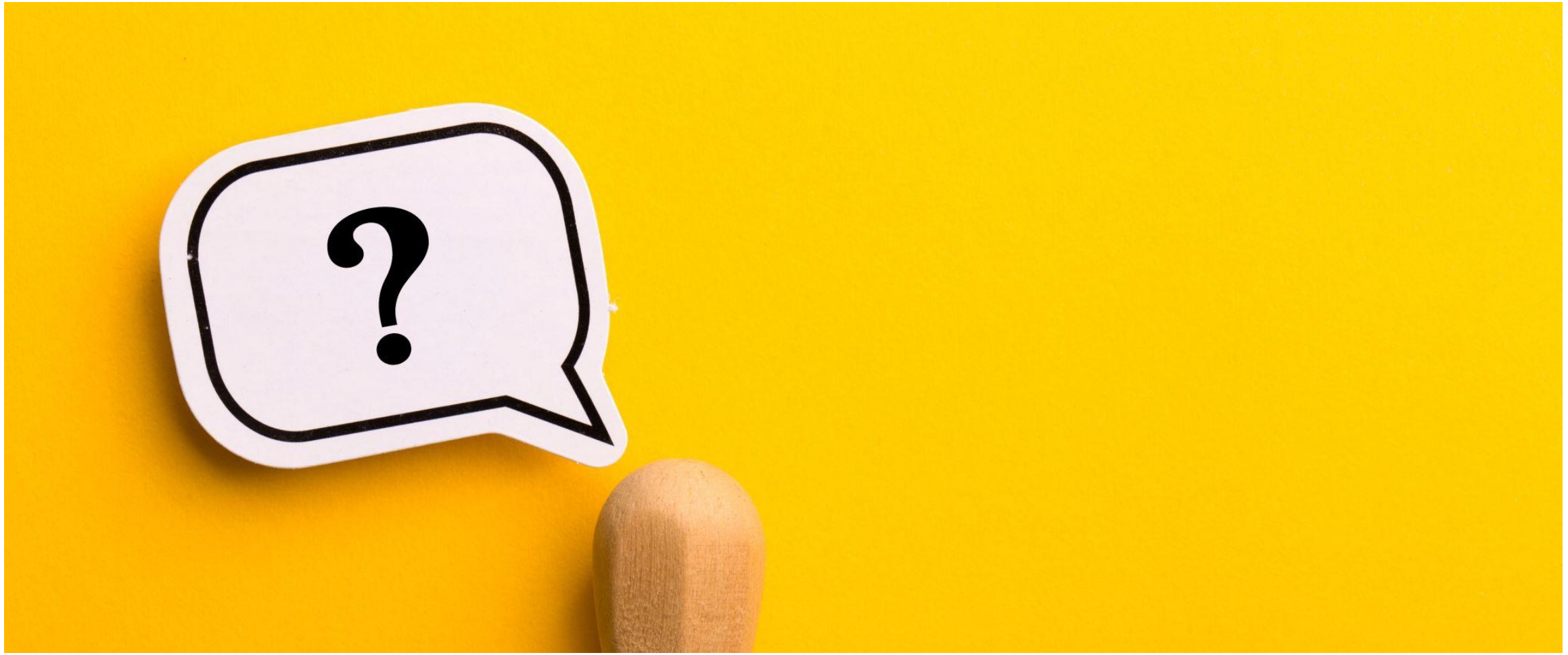
Outcome

Examples of AI





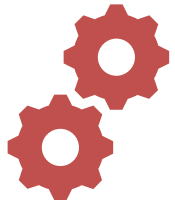
What AI Means for Actuaries



What AI Means for Actuaries

Data

- More familiarity with big data management and processing tools
- Identification of additional data sources



Machine Learning

- Application of more advanced machine learning and analytics tools
- Consumers of output from more advanced models

Deployment

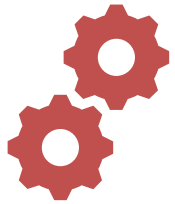
- Key initial focus
- Involvement through deployment
- Automation of traditional actuarial tasks
- Thinking beyond traditional boundaries
- Continuous learning

What Actuaries Mean for AI

Technical Expertise Combined with Professionalism Requirements

Data

- Understanding the source of the data
- Ensuring data is cleansed and appropriate for the use case



Machine Learning

- Incorporation of actuarial judgment
- Consideration of ethical concerns
- Understanding the limitations of the models

Deployment

- Transparency
- Risk mitigation
- Continuous learning

Keys to Successful Execution of AI Initiatives

Complete

- Across all key areas in an organization
- Championed from the top executive levels
- Include balance of targeted analytics and data exploration

Consistent

- AI should be focused on the overall strategy
- AI in different areas should be coordinated

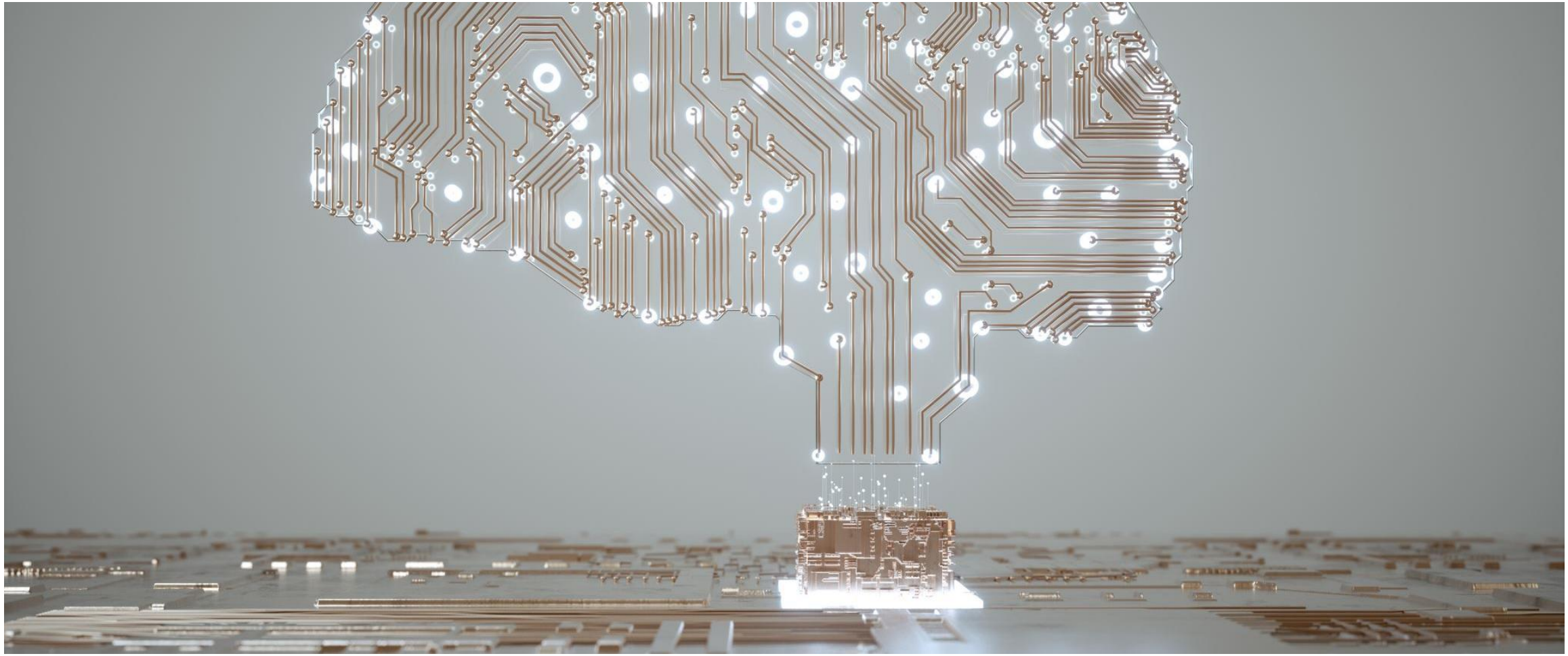
Intentional

- Begin with the end in mind
- Data collection, processing analytics, and implementation are all done in purposeful manner
- Buy-in and change management
- Outcome measurement

Ask AI – Effective AI Strategies

1. **Understand the Opportunities and Challenges**
   - Identify areas for AI impact
   - Evaluate data readiness and infrastructure
   - Consider ethical implications
   - Focus on human AI collaboration
2. **Implementing AI Strategy**
   - Start with POC
   - Develop roadmap for full-scale implementation
   - Invest in AI talent and training
   - Choose the right AI tools and technologies
   - Focus on data security and privacy
3. **Specific AI Applications**
   - Predictive modeling
   - Automation
   - Personalized customer experiences
   - Enhanced risk management
   - Low c-de/no-code solutions
4. **Key Considerations**
   - Maintain actuarial professionalism
   - Focus on explainability
   - Stay up to date on AI advancement
   - Embrace continuous learning
   - Collaborate with experts

Examples of AI



Example: Using Human vs. AI to Prep Loss Reserve Data

- Human strengths vs. AI speed
- AI's surprising insights or misses
- Teaming human judgment + machine horsepower

Example: Github Copilot – Using AI to Build Model Code

```
# model ClaimNb with glm with exposure as offset
model <- glm(ClaimNb ~ District + Group + Bonus +
               Age + Density + offset(log(Exposure)),
             data = train, family = poisson(link = "log"))
```

- The positives:
  - The Copilot set up the expected Poisson distribution with log link function
  - The Copilot set up the offset with the log of exposure, as desired
- The negatives:
  - The list of variables is a complete shot in the dark

```
 [1] "IDpol"      "ClaimNb"    "Exposure"   "VehPower"   "VehAge"
 [6] "DrivAge"    "BonusMalus" "VehBrand"   "VehGas"     "Area"
[11] "Density"    "Region"
```

Example: Answering an Offset Objection

Here's a demonstration of using an **offset in a Poisson GLM** with synthetic insurance claims data:

📊 Model Comparison

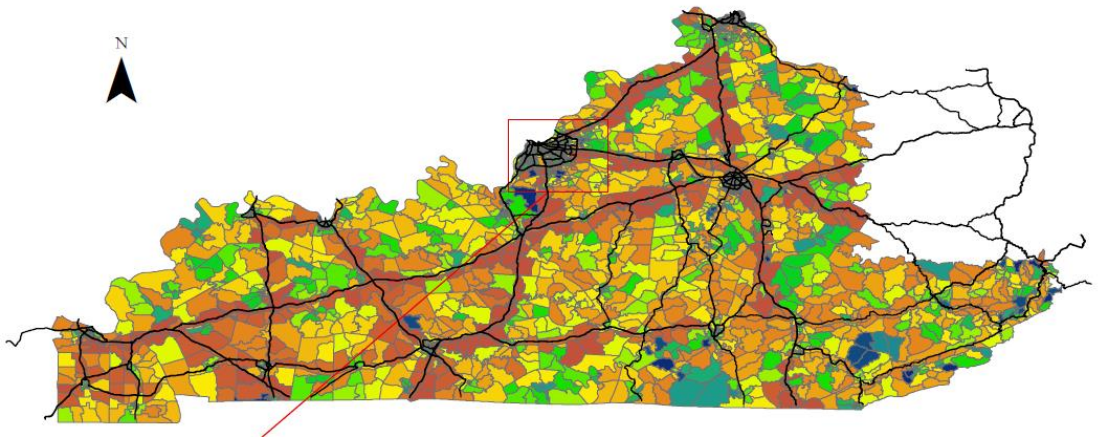
We fit two models:

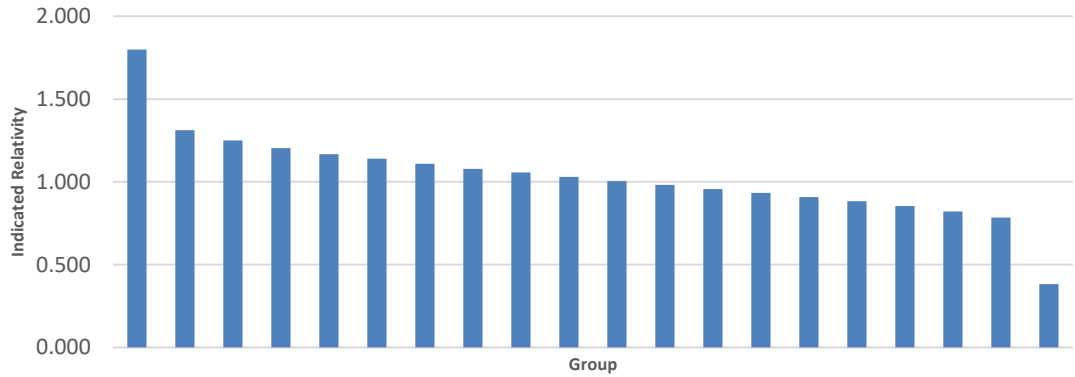
1. **Without Offset**:
   - Ignores exposure time.
   - Coefficients:
     - Intercept: 0.8465
     - Age: 0.0270
2. **With Offset** (`log(exposure)`):
   - Adjusts for varying exposure times.
   - Coefficients:
     - Intercept: 0.6343
     - Age: 0.0275

The **age coefficient remains similar**, but the **intercept adjusts** to account for the exposure. This is expected because the offset shifts the baseline level of expected claims.

Example: Dynamic Traffic Information

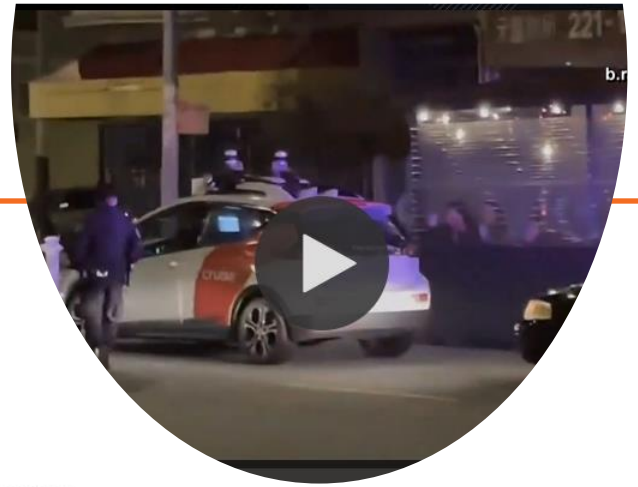
- **Business problem** – incorporating the constantly changing geographical risk associated with automobile insurance
- **Examples of data**
  - Speed (median, average, harmonic average)
  - Speed limit
  - Time traveled on road segments
  - Traffic density
  - Speed variability
  - Ratio of speed to speed limit
- **Possible Solutions**
  - Dynamic risk assessment
  - Dynamic risk mitigation

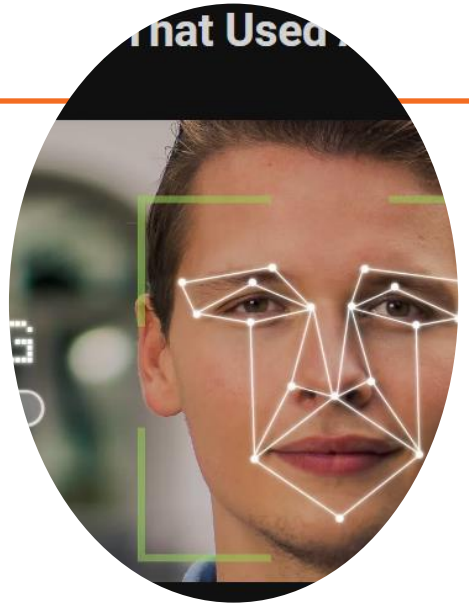




Risks of AI

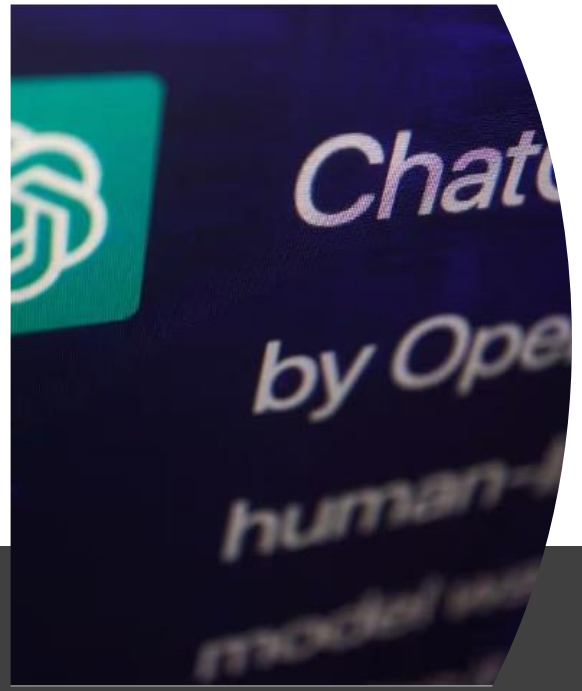
PINNACLE
ACTUARIAL RESOURCES





lawyers sa
tGPT cases in l

T · Updated 5 months ago



Examples of AI Gone Wrong

-driving c
and California ban

Motors subsidiary's autonomous cars will
software update

Risk: GenAI Litigation

One bellwether case making recent headlines is Kadrey et al. vs. Meta Platforms, which surrounds the use of allegedly pirated libraries of fiction (which one Meta researcher wrote is “great” for training LLMs). Plaintiffs allege, “Meta stole Plaintiffs’ copyrighted books to create a product that can mimic what it thieved.” Defendants contend, “Anyone can read and learn from a book without permission — whether they buy it new (and the author is remunerated), or instead buy it used, borrow it from a friend, or find it on a park bench.” Judge Vince Chhabria pushed back against defendants’ motion for summary judgment, reportedly saying, “You have companies using copyright-protected material to create a product that is capable of producing an infinite number of competing products.” A pro-plaintiff finding could necessitate greater attribution in what GenAI produces.

Risk: AI Washing Case

- On August 25, 2025, the Federal Trade Commission (FTC) announced a new AI-washing case against Air AI, a company selling business coaching and support services. The **FTC alleged that the company made deceptive marketing claims about its artificial intelligence (AI) tool, including that it could operate autonomously and enable buyers to replace or avoid hiring employees.**

- The **defendants claimed** that Odin could conduct "**long phone conversations that sound like a REAL human, with infinite memory, perfect recall, and can autonomously take actions across 5,000 plus applications.**" They also claimed the tool was **better than human sales representatives**, as it could perform the role "without having to be trained, managed, or motivated."

- However, the FTC alleged that, even when this technology was available, it "**does not function as advertised**," and is instead "**faulty**, often not able to perform basic functions like placing outbound calls to businesses, scheduling appointments, taking down email addresses, or responding accurately to questions….Rather than a built-for-you solution that requires minimal effort, getting the conversational AI to function at all **requires a substantial time commitment where consumers must pre-script answers for every potential question, making it nearly impossible to use."**

Risk: AI Replacing Humans

Taco Bell Says ‘No Más’ to AI Drive-Thru Experiment

If you think humans get your order wrong, wait until you try AI.

By **AJ Dellinger** Published August 28, 2025 | Comments (92)

An illuminated Taco Bell drive-thru sign outside of the restaurant at night © Shutterstock/Hrach Hovhannisyan

Risk: Legal Responsibility

CRIME

Former tech executive spoke with ChatGPT before killing mother in Connecticut murder-suicide: report

Stein-Erik Soelberg killed his 83-year-old mother before taking his own life in a Connecticut home

By **Louis Casiano** · **Fox News**

Published August 29, 2025 5:52pm EDT | Updated August 29, 2025 6:40pm EDT

Opportunity of AI

PINNACLE
ACTUARIAL RESOURCES

AI Opportunities: Fairness

The latest research in model fairness and model de-biasing is introducing an additional component to the **concept of model bias that transcends the purely statistical context.** The central theme in this additional dimension of bias detection and bias mitigation is attempting to provide practitioners of analytics with mechanisms and mathematical constructs to **minimize the social inequalities that their models may capture through data** and **ensure that the model does not unfairly discriminate against certain protected classes.**

Independence	Separation	Sufficiency
$\hat{Y} \perp A$	$\hat{Y} \perp A \mid Y$	$Y \perp A \mid \hat{Y}$

A - protected attribute

Y - observed value of target variable

Ŷ - predicted value of target variable

AI Opportunities: Transparency

- Definitions
  - Free from pretense or deceit
  - Easily detected or seen through
  - Readily understood
  - Characterized by visibility or accessibility of information especially concerning business practices

- Other analytic disciplines have not historically focused on transparency - this creates an opportunity for actuaries

Data

- Inputs to the process can be transparent
- However, the source of these inputs might not be as obvious

Machine Learning

- In the United States, regulators are very focused on transparency of the models
- In the United States, most insurance rate filings are available to the public, but most of the public doesn't care
- In many other jurisdictions around the world, the focus is on the outcomes

Deployment

- For customers, this is what matters
- Many regulatory bodies focus on the appropriateness of the outcomes, less so in the United States

AI Opportunities: Risk Mitigation

Big data and machine learning allow actuaries to better identify and measure risk

A natural outcome is also more information on the key drivers of risk

This leads to the possibility of collaboration between actuaries, business, government and consumers to help mitigate risk

Thank You!

Roosevelt C. Mosley, Jr., FCAS, MAAA, CSPA

309.807.2330

rmosley@pinnacleactuaries.com

PINNACLE
ACTUARIAL RESOURCES