Can Your Supply Chain Trust AI?

Rethink what "ethical AI" really means in high-stakes environments like logistics, procurement, and risk management

LUNCH AND LEARN

Thursday, December 4, 2025 | 12pm ET

Thank you for attending!

Featuring
Rosemarie Santa Gonzalez

Related Course Offering
scl.gatech.edu/genai

See the course details page for upcoming session dates

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Can your Supply Chain Trust AI?

Rethinking What Ethical AI Means

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Why This Matters?
Ethical AI

Responsibility

- Supply chains rely on trust between :

  Producers → Carriers → Retailers → Communities

- AI adds new actors:

  Models, Algorithms, Optimizers…

But trust ≠ accuracy, trust ≠ performance

The Problem:

Ethical AI = Fairness ?

Ethical

- Most definitions include:
  - Bias detection
  - Fairness metrics
  - Transparent models

- But ethics is not just a model property

Ethical AI = responsible design + deployment + consequences

Fairness is necessary… but not sufficient.

Supply Chain Reality Check

Supply chains = high variability + human stakes

- Data gaps
- Operational constraints
- Organizational incentives
- Cultural + community contexts

What Does Trust Actually Mean in AI?

Three dimensions:

1. **Technical trust:** reliability, robustness, uncertainty

Most AI deployments focus on *1* only

2. **Operational trust:** alignment with workflows, feasibility

3. **Social trust:** legitimacy, transparency, power dynamics

Who built it and **with Whom**

Ethical AI ≠ Fairness

Ethical AI must include:

- Safety
- Robustness
- Human impact
- Power dynamics
- Operational feasibility

- A fair model can still produce unethical outcomes

Areas of Opportunities
Some not great examples

Real World Example #1: Amazon Warehouse Optimization

What happened:

- Algorithm scheduled humans like *robots*
- Increased injury rates
- High burnout and turnover

What went wrong:

- No worker-centered constraints
- No fatigue model
- No ethical “bounds” on optimization

https://www.nelp.org/insights-research/amazons-outsized-role-the-injury-crisis-in-u-s-warehouses-and-a-policy-roadmap-to-protect-workers/

What could have prevented it:

- Ethical modeling!

- Step by Step:

→ Add human safety constraints

→ Integrate ergonomic metrics

→ Include worker voice in model co-design

https://www.help.senate.gov/imo/media/doc/amazon_investigation.pdf

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Real World Example #2: Boeing MCAS Automation

What happened:

- AI-type automation repeatedly corrected plane angle based on faulty sensor
- Pilots were not informed
- Lack of transparency → catastrophic failure

What went wrong:

- No human-in-the-loop
- No redundancy
- No scenario-based risk modeling

What could have prevented it:

An Ethical AI lens

- Design for “graceful failure”
- Transparency about system behavior
- Robust worst-case scenario modeling


Boeing’s 737 Max debacle could be the most expensive corporate blunder ever

By Chris Isidore, CNN Business

4 min read · Published 1:06 PM EST, Tue November 17, 2020

https://www.cnn.com/2020/11/17/business/boeing-737-max-grounding-cost/index.html

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What These Examples Show

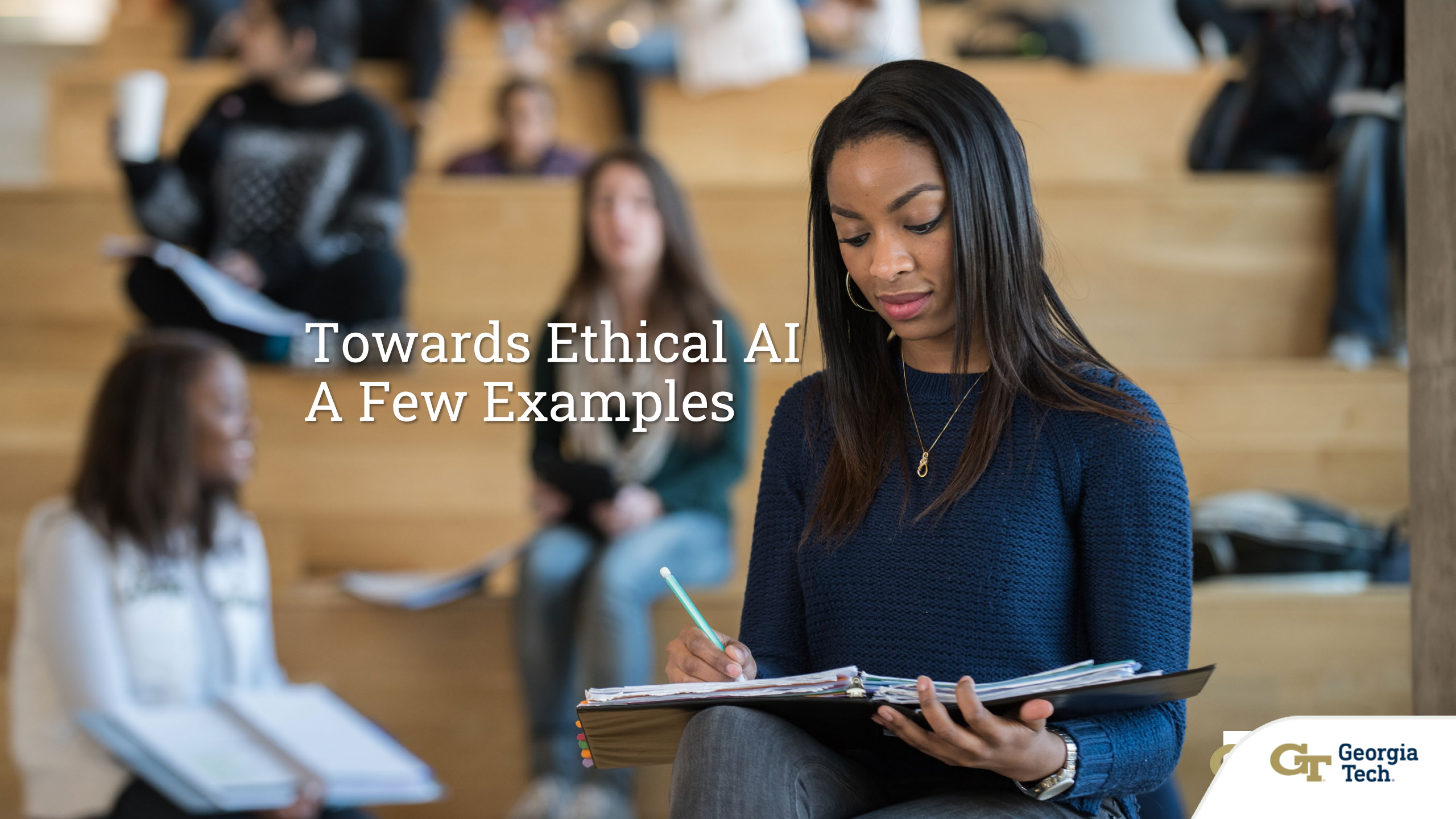
Across sectors, AI failures happened because:

- Objectives were misaligned with human values
- Data and proxies encoded inequality
- No one asked *“Who could be harmed?”*
- Governance was weak or nonexistent
- Communities were not involved in shaping decisions

Supply Chain Reality: AI Adds Risk

- Algorithms can propagate systematic bias
- Poorly defined objectives magnify inequities
- Optimization can unintentionally harm…

  … workers, suppliers, small producers, or communities


Towards Ethical AI
A Few Examples

Case Study 1: Cold Food Supply Chains

Wisconsin Food Hub Coop

- Collaborative routing + scheduling
- Data constraints
- Value misalignment: efficiency vs. equity
- Community-engaged modeling

Naive optimization = harms; Co-design = trust

Case Study 2: Food Access Simulator

ICICLE + UW Madison

- Agent-based model for supermarket placement
- Integrates: walking routes, multimodal transport, environment (heat/flood)
- Built with community partners, not just for them

We can model anything, but *should we? And for whom*?

The Missing Middle: Ethical Modeling

Ethical AI decisions happen at every stage

I. Problem formulation
II. Data acquisition & Cleaning
III. Model Optimization/Design
IV. Interpretation of results
V. Deployment & Governance

Who Gets Harmed if the Model is Wrong?

- Producers → price volatility
- Retailers → stockouts
- Carriers → labor & safety
- Communities → access issues

How to Build Supply-Chain AI You Can Trust

Context-Aware Modeling	*Participatory Co-Design*	*Transparent Assumptions*	*Operationally Feasible Solutions*
• Do not assume ideal data	• All decision-makers at the table	• Not just model transparency	• Aligned with real constraints

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The Ethical AI Framework: Call to Action!

- We need frameworks that go beyond fairness
- Structured conversations with stakeholders
- Checklists for modeling decisions
- Governance for deployment

Practical Tools to Start Today

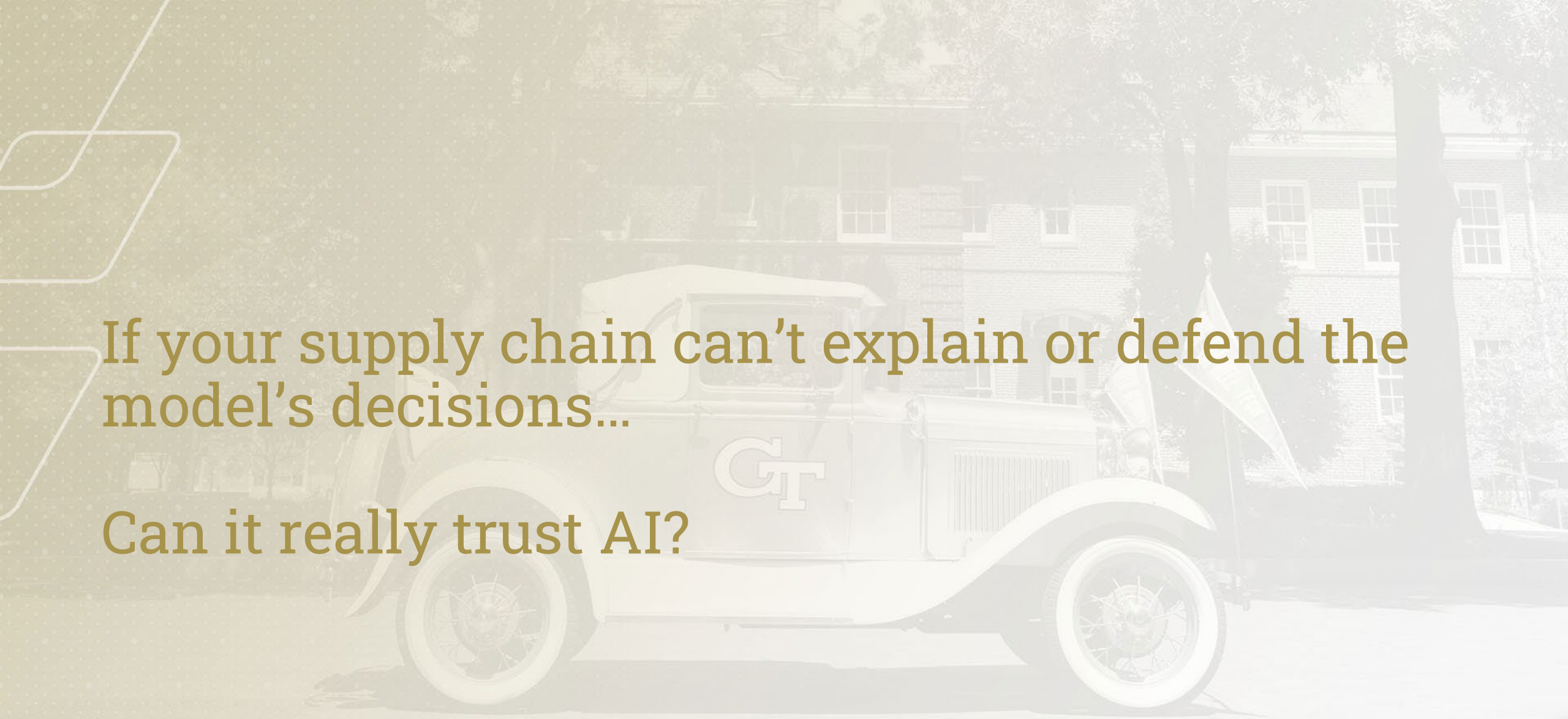
- **Ask** critical questions in every phase:
  What problem are we solving? Who benefits? Who is burdened?
- **Identify** blind spots
- Build **multidisciplinary** teams
- Start with small **pilots**
- **Document** modeling assumptions like risks

What Ethical AI Looks Like in Practice

- Routing models that incorporate equity weights
- Forecasting that accounts for uncertainty and community impact
- Optimization that remains interpretable to managers
- AI that respects privacy constraints

If your supply chain can’t explain or defend the model’s decisions…

Can it really trust AI?



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Questions?

One more thing…

The Greatest Danger in Times of Turbulence is not the turbulence;
*is **to Act with Yesterday's Logic** – Peter Drucker*

You Got This!

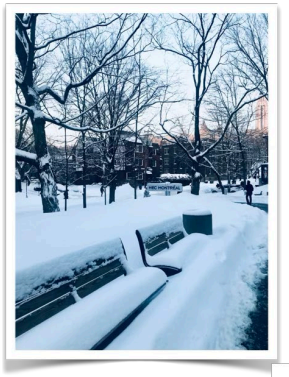
About the Speaker

Puerto Rico

B.S. in Industrial Engineering

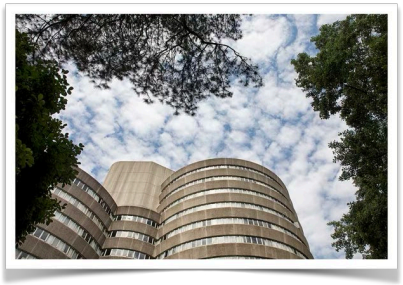
M.S. in Industrial Engineering
Systems Management

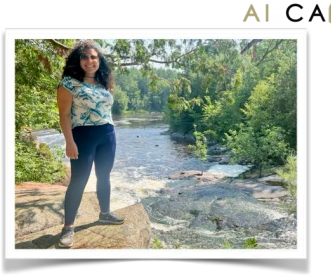
to Montréal



Ph.D. in Administration,
Logistics and Supply Chain

to Wisconsin + ATL





Posdoct at AI4OPT

Cyber Infrastructure Consultant
Research Scientist II

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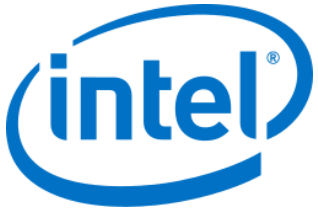
Socially Responsible Logistics → IRL



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she/her/they/them | why it matters?
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Upcoming Courses

Generative AI Application for Supply Chain Professionals

March 23-26, 2026 | Virtual (Instructor-led)

Generative AI Application for Supply Chain Professionals

April 20-22, 2026 | Live in Savannah, GA

Generative AI Application for Supply Chain Professionals

Oct 19-21, 2026 | Live in Savannah, GA

To inquire about private courses or 1 day workshops email:

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Upcoming SCL Lunch and Learn Opportunities

Forecasting 2026:
What's Next for Supply Chains

w/ Chris Gaffney

Thursday, Jan 8th | 12-1pm ET | Zoom Registration Link

scl.gatech.edu/jan26-lnl

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