

AI in the Real World

Data, Power, & Society - Day 01

Welcome to AI in the Real World

CMSE 492 (aka CMSE 101) • Fall 2026

Prof. Danny Caballero



Welcome!

This is not a coding class.

You will not learn to build AI systems.

Instead, you will learn to evaluate, question, and push back on them.

This class aims to help you become a **Critical Pragmatist** when it comes to AI.

Why This CMSE 492 (aka 101)?

By the time you graduate:

- **You will work with AI systems.** Probably with many of them.
- **You will make decisions about AI.** How to use it, when to trust it, whether it should be used at all.
- **Forms of AI will be a part of your everyday life.** From websites to software to vehicles to appliances.
- **Others will ask your opinion.** "Does this AI system seem fair to you?" "Should we deploy this?" "Do you trust it?"

This course prepares you to answer those questions with evidence, not intuition.

Who are your instructors?

Prof. Danny Caballero (he/they)

Physics & Astronomy; CMSE; CREATE for STEM

- Lappan-Phillips Professor of Math and Science Education
- Co-direct two research labs (in Physics & Computational Science Education)
- BS Physics, Texas; MS & PhD Physics, Georgia Tech; Postdoc Physics Education, CU-Boulder
- Former custodian, copy shop manager, high school physics teacher in Atlanta Public Schools
- Labor organizer for the Union of Tenure System Faculty (UTSF-MSU)
- Starting my 14th year at MSU (**Go Green!**)



If you are comfortable, please call me "Danny"; Prof. Caballero is fine, too.

Who are your instructors?

Jorge Martinez-Ortiz

CMSE & Political Science

- 4th year PhD Student in CMSE and Political Science
- BS Physics, Baylor University
- International student from Zacatecas, Mexico
- Treasurer for the Comunidad Latinoamericana (CLA) graduate student org.

You can call me “Joy” or “Jorge”.



A Note on the Material

This course covers topics related to AI that may be:

- **Sensitive** (algorithmic discrimination, bias, surveillance)
- **Controversial** (regulation, job displacement, autonomy)
- **Uncertain** (AI's future role, long-term impacts)

It's also going to touch on issues that affect people differently whether that be **gender, race, ethnicity, class, disability, or immigration status**.

- We are all affected by AI and more connected to each other than we realize.
- Each of you has **different biases, experiences, and perspectives**. That includes your instructors.

We will not all agree. That's completely okay. But we will listen and hear with humanity.

Our Shared Framework: DTPA

We use **one vocabulary** to analyze everything.

The Data-Tools-Practices-Actions Framework

Instead of each person bringing their own lens, we will strive to speak the same language.

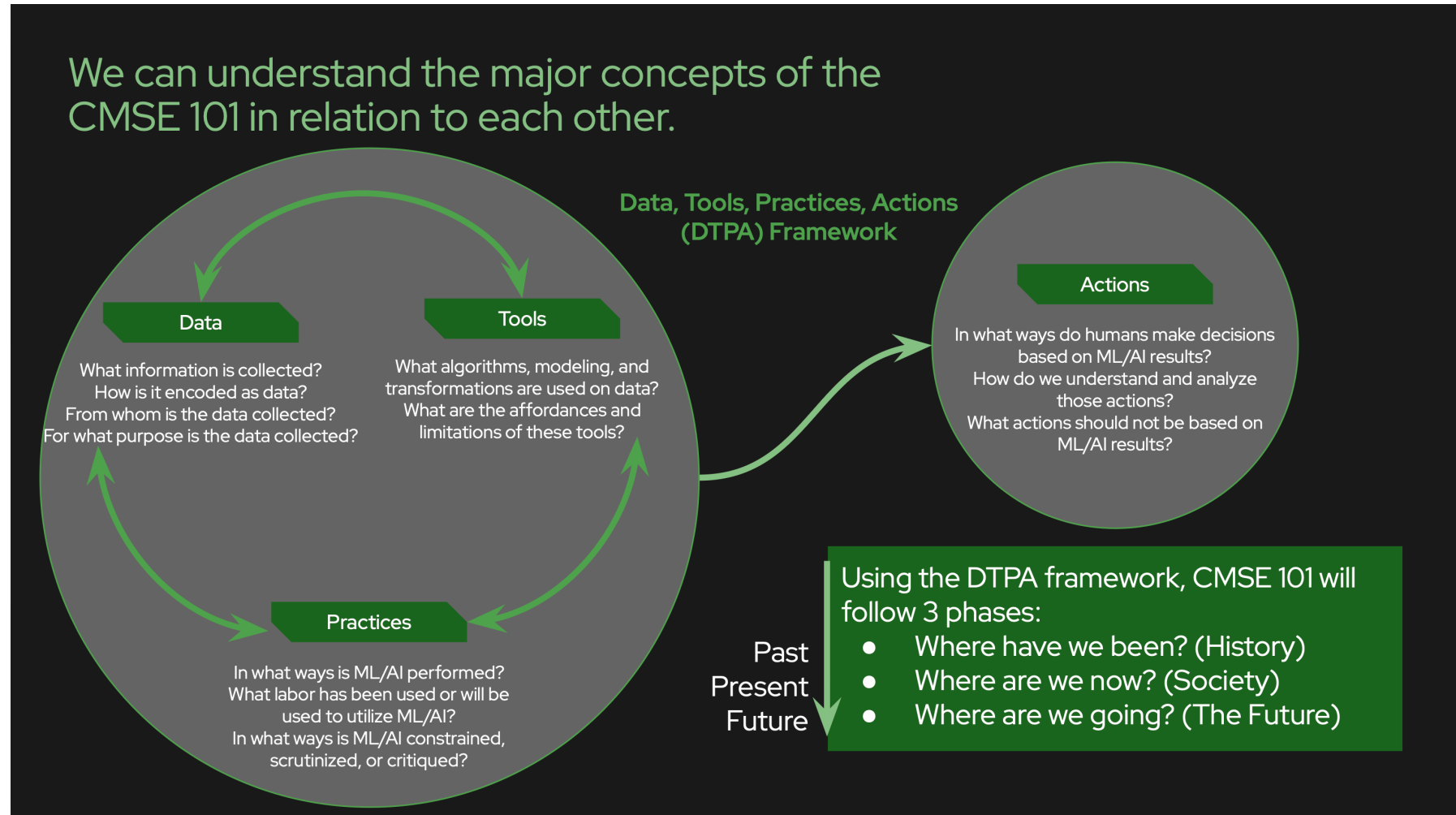
This lets us **disagree on conclusions** while **agreeing on facts**.

By the end of the course, you'll be fluent in using DTPA for analysis.

It can be your *starting* toolkit for evaluating *any* AI system.

We also hope you will help us develop and strengthen this framework for teaching and learning about AI.

The DTPA Framework



The Four Components of DTPA

DATA

What information is collected? Who is included/excluded? What gets erased?

TOOLS

How does the AI actually work? What assumptions are built in? What can it do? What can't it do?

PRACTICES

Who uses this system? How? What labor built it? How is it constrained or enabled?

ACTIONS

What happens as a result? Who benefits? Who is harmed? Does it solve the stated problem? At what cost?

Course Structure

Three main components form your grade:

- 1. **Class Engagement (40%)**
- 2. **Case Studies (30%)**
- 3. **Case Design (30%)**

Your letter grade will be determined by the following cutoffs:

Earned Grade	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.0
Score Range	> 3.75	3.74... - 3.25	3.24... - 2.75	2.74... - 2.25	2.24... - 1.75	1.74... - 1.25	1.24 - 0.75	< 0.75

1. Class Engagement (40%)

Each component counts equally towards your grade

- **Daily Class Attendance & Participation (drop 3)**
 - Being attendant is important
 - We will use lots of group work and being present for your group matters
 - *We will check for your participation daily*
- **Forum posts (weekly, drop 2) + replies (~250 words each)**
 - Posts are expected in response to prompts every week (11:59pm Sunday); APA formatting required
 - *Forum replies earn "Deeper Engagement" credit and are not required*
- **Exit tickets (after every class, ~100 words each, drop 3)**
 - Each class, you will debrief before 5pm
 - *Can also be a place to tell me how you are doing with the material or how things went today*

2. Case Studies (30%)

Each component counts equally towards your grade

- **Case Studies (Google Doc Template, drop 1)**
 - Analyze AI systems using DTPA each week as a group
 - *Turn in your weekly report by Sunday 11:59pm*
- **Individual & Metacognitive Report (~250 words, drop 1)**
 - Reflect on your own learning and effort; bring your values into what we just completed
 - *Turn in your report by Sunday 11:59pm*

3. Case Design (30%)

Each component counts equally towards your grade

Semester-long group project, either:

1. Design an AI application that directly addresses a major societal problem, or
2. Propose limits, safeguards, or a set of policy constraints on an existing AI system

Getting you there

- **Two scaffolded assignments (Oct 2nd & Nov 6th)**
 - Support your group's development
 - Receive and respond to feedback from instructors
- **Final showcase (draft due Dec 4th, present last week of class)**
 - Showcase is ungraded but will have class feedback to improve final turn-in
 - Presenting at showcase unlocks final turn-in
- **Final project turn in (Day of our final exam)**

How We Grade: Labor & Standards-Based

This is **not** a traditional grading system.

What it means:

- Your grade reflects your effort and growth, not just "right answers"
 - *There are no right answers to what we are working on*
- Most assignments get a second chance if you don't meet the standard initially
- There's no curve, no "grading on a bell curve"

Everyone can earn a 4.0 and we hope you will

How We Grade: Labor & Standards-Based

This is **not** a traditional grading system.

What it doesn't mean:

- "Do whatever you want and pass"
- Standards are real, and we hold to them
- You need to revise and engage with feedback

The goal: Learn the material deeply, not just perform well on a test.
We have no tests anyway!

What Does "Meeting the Standard" Look Like?

"In general" - specifics are available in assignments

Meets Standard (3.0)

- Evidence from reliable sources; documenting sources well
- Thoughtful analysis using the DTPA framework
- Acknowledgment of complexity and multiple perspectives
- Clear and respectful communication

Exceeds Standard (3.5–4.0)

- Deep research beyond assigned readings; new resources and perspectives
- Metacognitive reflection on your own learning; deep engagement
- Leadership, Exceeding Efforts, or Novel Contributions in group work

Class Culture & Expectations

Here's what we need from you:

- **Show up.** Physically and mentally. Exit tickets require attendance.
- **Engage thoughtfully and respectfully.** Disagreements are ok, arguments are not.
- **Think about your position.** No one has your experience and background.
- **Disclose AI use.** If you used it tell us. We trust you.
- **Meet deadlines.** Forum posts due before class each week. Most other deadlines: Sundays 11:59pm.
- **Ask questions.** If something doesn't make sense, say so.

Class Culture & Expectations

Here's what you should expect from us:

- Clear expectations and timely feedback
- A second chance on most assignments
- Support if you're struggling; space if you need it
- Respect for your time and perspectives; valuing you as a person
- Stepping in to manage issues, concerns, and disagreements

Accommodations

We have tried to design a class that welcomes every learner

*Please submit your official accommodation paperwork and
Speak with Danny and Jorge about your needs*

Questions?

When you ask a question in class and a small conversation starts



This Week's Agenda

1. **Course intro** (✓)
2. **Group the class!** - Get up and move around! (you're here ✓)
3. **Wednesday: Constructing Categories** - How we perceive people matters.
4. **Wednesday: Who do we make into groups?** – We'll work through the Census timeline together
 - In your assigned groups; check D2L for your first assigned group, please
 - Exchange contact information!
5. **Friday: First Case - Census Data** – Drawing on Wednesday's work; Focusing on the Data in DTPA

Exit ticket – Your first one is due by 5pm today on D2L.

Activity: Making Groups - Part 1

Break into six random groups of roughly equal size

Grab a pack of index cards

- You have **seven (7) minutes** to come up with as many things you all have in common
 - Nothing pejorative (e.g., *we all hate Drake*) or physical (e.g., *we all have red hair*)
 - Write as many as you can!
- You will have **three (3) more minutes** to identify the top 3 things y'all think the rest of the room **won't** share
 - Each of you write those 2-3 things on index cards (1 idea per card)

Keep your cards, you need them for Part 2!

Activity: Making Groups - Part 2

Shuffle into six *new* random groups of roughly equal size

No more than one other person from your first group

- Share your 3 top things; is there anything that hangs you all together?
 - Again, nothing pejorative (e.g., *we all hate Ohio State*) or physical (e.g., *we all have short hair*)
 - Decide on top 2-3 (discard unused cards; or write new cards)
- If you can't find 2-3 things, shuffle yourselves again!
 - Try hard to keep groups of equal size

Once you 2-3 things with a new group, try to name your group.

You will only have ten (10) minutes. Work fast!

Activity: Making Groups - Wrap Up

Share out the commonalities!

Discussion:

- How easy or hard was it to find groups?
- Are these groups (or categories) the same "kind of thing"?
- Are these categories truly unique?
- What does this activity tell you about categorizing people?

Reminders for this week

Exit Tickets, D2L, and the Course Website

- Don't forget to complete today's Exit Ticket by 5pm (on D2L)
- Review your group assignment on D2L and connect with your group before Wednesday's class!
- Spend time before Friday (~90 minutes) going over this week's preparatory materials

Questions?

Email Danny (caball14@msu.edu) and/or Jorge (martjor@msu.edu)

Have a great first week!