



Data Ethics

Introductions



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Agenda

- Data Ethics Defined
- Expanding Data Ethics to AI/ML
- Research & Ethics Frameworks



Data Ethics.

An area in AI ethics with focus on data practices with impact on people and society. It recommends responsible and sustainable data collection, processes, and storage practices. Additionally, it ensures ethical use of data.

Data Ethics

Few principles

- Ownership
- Privacy and Confidentiality
- Consent
- Transparency

Examples

- GDPR in EU
- Data Strategy by US gov



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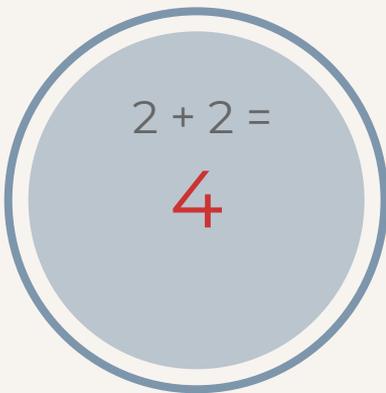
Machine Learning adds to value to data.

Collecting quality data & granting appropriate access are the building blocks to successful modeling.

Models can be explanatory or predictive yielding value from both perspectives.

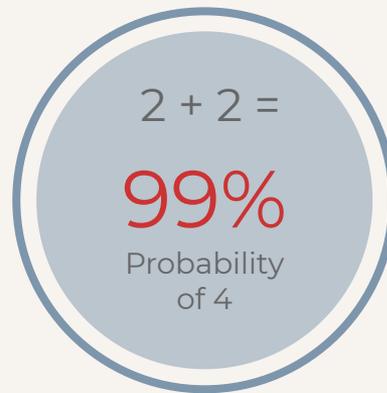
ML is fundamentally different.

Deterministic



If you build a calculator, it will *always* be correct.

Probabilistic



If you build a model, will be be *incorrect* immediately.

The Peter Parker Principle



With great power comes great responsibility.

AI has great power to help the world, but must be done in an ethical, explainable and equitable manner to realize its potential.

Let's implement AI.

Organization
Strategy



Collect Data



Build & Validate a
Model



Deploy



Monitor



"Which business gets
a SBA loan?"

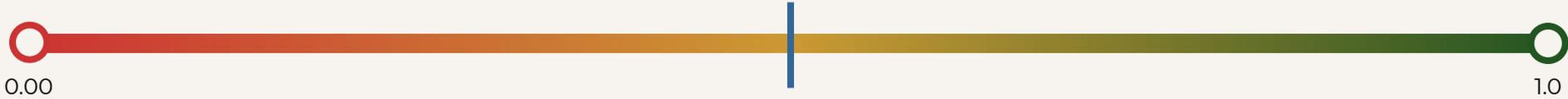
"Revenue, Industry,
Employees, Longevity"

"Use machine
learning!"

Build a webapp
for applicants.

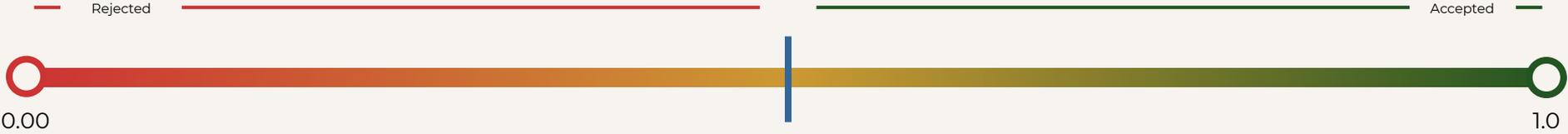
Infrastructure for
performance, data
integrity & fairness.

The model's outcome is on a spectrum.



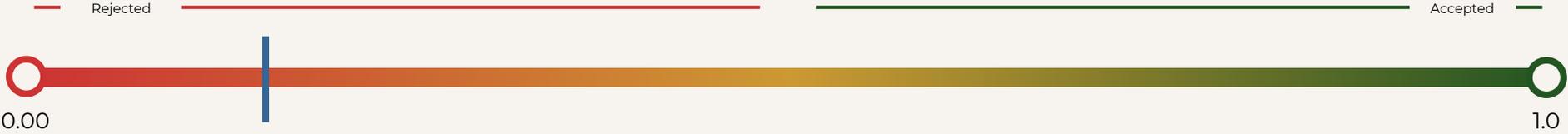
Where should the blue cutoff be placed?

The model's outcome is on a spectrum.



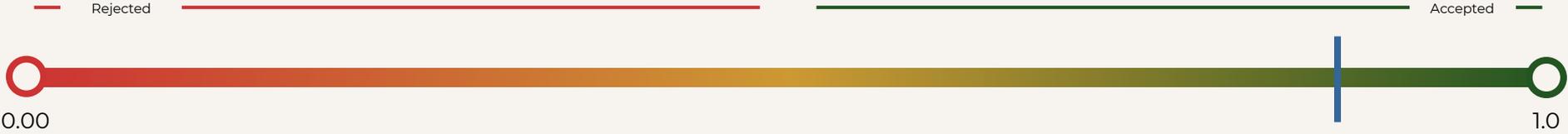
Unlike the model's understanding, the outcome is deterministic.

The model's outcome is on a spectrum.



Too low and you are extending to much credit.

The model's outcome is on a spectrum.



Too high and you are missing good opportunities.

At the cutoff similar candidates will have different outcomes.

Rejected

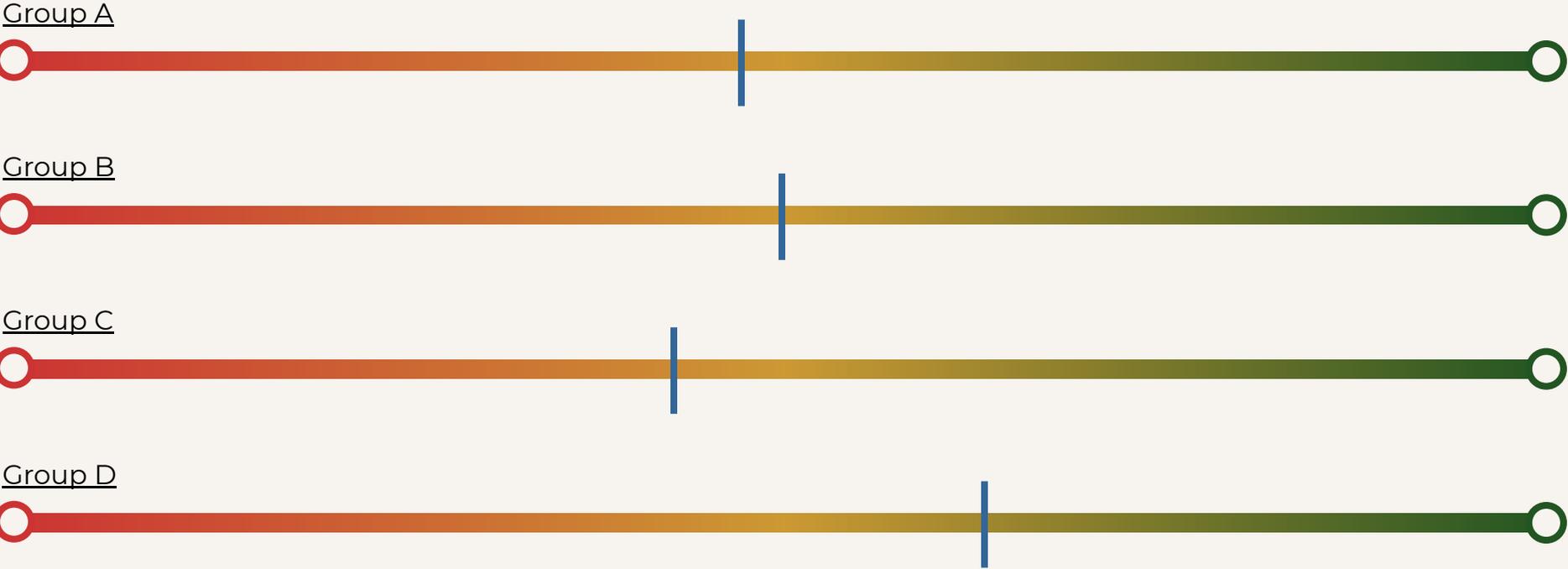
Accepted

Company A
Revenue: \$5m
Industry: Retail
Employees: 22
Longevity: 10 months



Company B
Revenue: \$5m
Industry: Retail
Employees: 24
Longevity: 13 months

To be fair, you have to think along multiple spectrums.



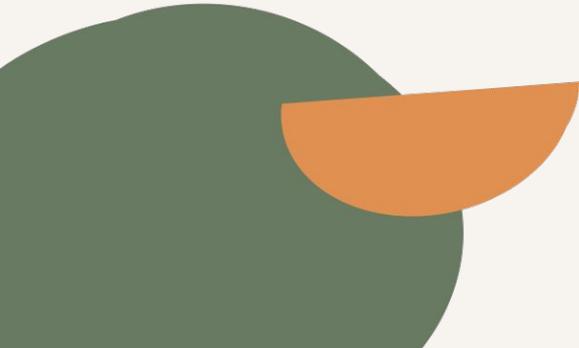
Should the model be fair by representation or by error rate?

AI Fairness is complicated.

Equal representation or equal error by gender, race, ethnicity, language, religion, disability, age, sexual orientation, pregnancy, political opinion, medical record, criminal record, marital relationship status, trade union activity, genetic information...

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Research & Academic Curiosity have implications.



“For some researchers, whether the data is public is the only thing that matters.”

**Non-Exhaustive plus state & local data sources!*

Public data users can affect positively & negatively.

- Predict flu (or other pandemic) trends
- Identify at risk populations for aid
- Understand & counter act misinformation
- Improve response during natural disasters



- Cause privacy concerns
- Amplify systemic bias
- Identify at risk populations for surveillance, targeting, or police action
- Disenfranchise citizens



Ethics is a long standing field of study

Many cultures, perspectives and logical deductions have contributed to the field.

Popular Ethical Frameworks*

Contractual Obligation

Decisions and actions are agreed upon and enforced through mutual obligation.

Utilitarianism

Decisions that maximize the happiness and minimize the pain for the greatest number are ethical.

Rights-Based

Human beings are an “end” not a means & should be treated as having unalienable rights.

Golden Mean

Virtuous actions are between two extremes, deficiency & excess.

Veil of Ignorance

Decisions should be made with a “veil” without information such as intellect, race, gender etc.

Categorical Imperative

Make an action a universal to see if it is ethical. If the action becomes illogical then it is immoral.

Federal Data Strategy: Data Ethics Framework

1. Uphold applicable statutes, regulations, professional practices, & ethical standards.
2. Respect the public, individual, and communities.
3. Respect privacy and confidentiality.
4. Act with honest, integrity, and humility.
5. Hold oneself and others accountable.
6. Promote transparency.
7. Stay informed of developments in the fields of data management and data science.

Explainable

Consistent access with defined processes; don't hide the societal benefit behind bureaucratic process, hard to navigate UI or ambiguous TOS.

Equitable

In accordance to privacy and data use implications, this is the people's data and value should be *broadly* maximized.

Accessible

A data virtualization layer is needed to provide an overall view of the data without regards to location, format or source.



Thank you.
Happy to answer any questions.

