# Open Source AI

## Status, Opportunities and Challenges

Anthony J. Annunziata

**Director of AI Open Innovation at IBM**

**AI Alliance Steering Committee Co-chair**

# AI Alliance

**A growing partnership among 117 organizations from 22 countries collaborating to advance open source AI.**

Visit our booth, #129

(on the left as you enter the sponsor pavilion)

- Universities
- Startups & Enterprises
- Science Organizations & Non-profits

# Five early predictions about open source AI

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1. **Open source AI will lag behind proprietary systems in capability. No.**

**Sources**
https://a16z.com/generative-ai-enterprise-2024/
https://www.datagravity.dev/p/open-source-vs-proprietary-models
https://www2.multivu.com/players/English/9240059-ibm-2023-global-ai-adoption-index-report/
https://ai.meta.com/blog/meta-llama-3-1/
https://www.ey.com/en_us/services/emerging-technologies/five-ai-adoption-strategies-survey

**Sources (more)**
https://lsvp.com/stories/remarkably-rapid-rollout-of-foundational-ai-models-at-the-enterprise-level-a-survey/
https://www.snowflake.com/data-ai-predictions/
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5. **Enterprises will be slow to adopt OS AI until [tech, legal, policy] settles down. No.**

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# Defining Open Models


1. Steady convergence toward a practical “minimum essentials” definition of **open weight model** that includes architecture, trained weights, and documentation.

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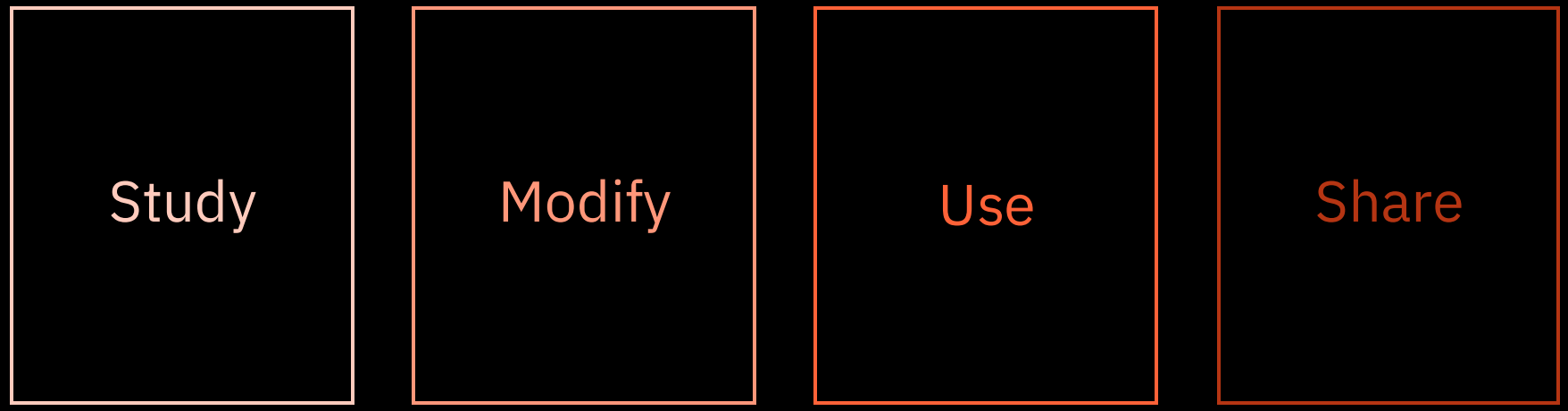



1. Steady convergence toward a practical "minimum essentials" definition of **open weight model** that includes architecture, trained weights, and documentation.

2. Broader definition of **open-source AI systems** will take time to converge and depends on developer and research community, governments and regulators.

IBM

# AI Alliance

Challenges and opportunities in open source AI

# Key Challenges – and Open Solutions

## Data

Provenance, transparency, quality, safety, legality, diversity, availability for training and tuning.

## Evaluation

Testing and monitoring of non-deterministic systems in various domains, especially for safety.

## Domain Expertise

Infusing deep domain knowledge and skills into models and applications.

# IBM Granite

A growing family of open models with data and build transparency, focused on enabling enterprise use cases.

# Granite Models

Granite **Code** (3B-34B)

Granite **Language** (3B-7B)

Granite **Function Calling** (20B)

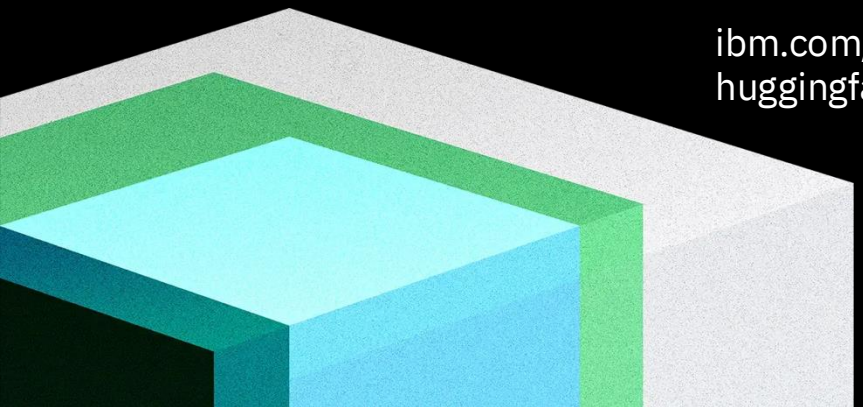
Granite **Time Series**

Granite **Geospatial**

Granite **Molecular**

Granite **Speculator**

Granite **Guardian**



ibm.com/granite/docs/
huggingface.co/ibm-granite

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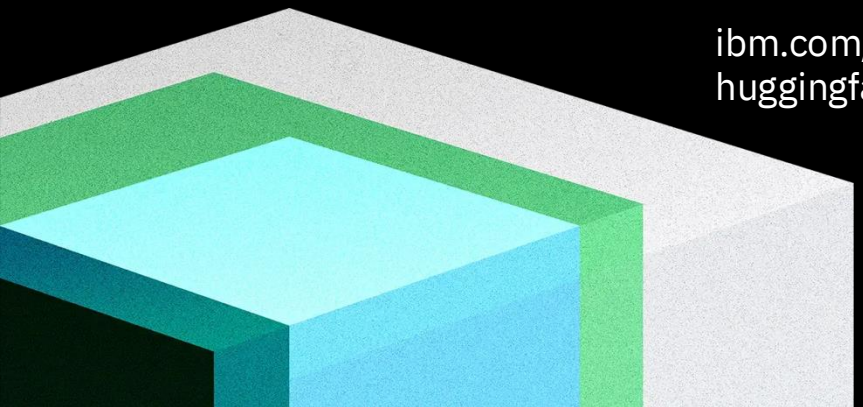

ibm.com/granite/docs/
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# Cooking with Granite

A community kitchen for co-creating recipes
to apply Granite to enterprise use cases.

github.com/ibm-granite-community

discord.com/invite/GgDyu9jBKw

README.md

## IBM Granite Community

Welcome to the Community Hub for building with IBM's Granite Model Family.

The Granite family of foundation models span an increasing variety of modalities, including language, code, time series, and science (e.g., materials) - with much more to come. We're building them with transparency and with focus on fulfilling rigorous enterprise requirements that are emerging for AI. If you'd like to learn more about the models themselves and how we build them, check out Granite Models.

**The mission of the Granite Community organization is to work collaboratively across industries and geographies to leverage Granite to solve problems and bring value across use cases, from code generation and modernization, to forecasting and predictive maintenance, to materials discovery.**

Our first goal is to build out a communtiy kitchen for Granite, starting with cookbooks that have proven recipes to help enrich, adapt, and apply Granite models to real world applications.

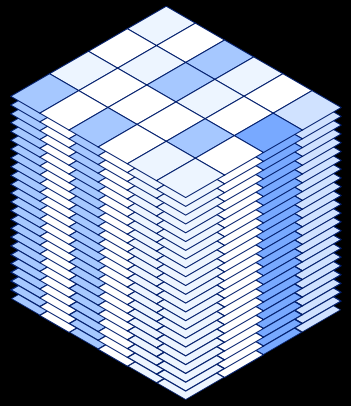
The *Granite Cookbooks* provide open-source recipes for using these models in various practical scenarios.

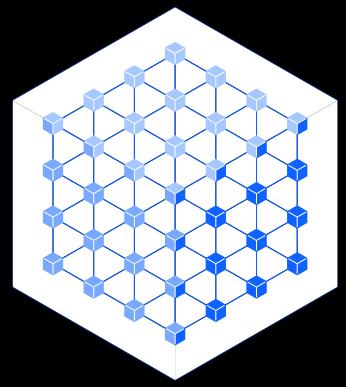
- `granite-code-cookbook` focuses on the Granite Code models
- `granite-timeseries-cookbook`

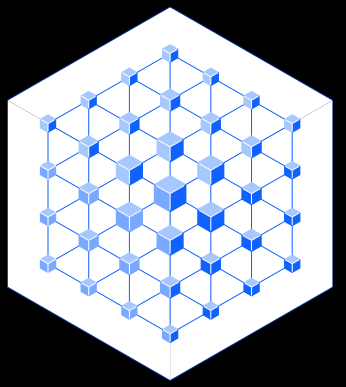
Other cookbooks are planned for materials and language.

# Domain Expertise: InstructLAB

Community-sourced model tuning with domain/skill taxonomies and synthetic data.







### Generate examples

Knowledge sources, plus a curated taxonomy of tasks.

### Teacher model(s)

A teacher model generates millions of questions and answers for taxonomies.

### Critic model(s)

Critic models filter the questions for correctness and quality, and prohibited content.

### Student model(s)

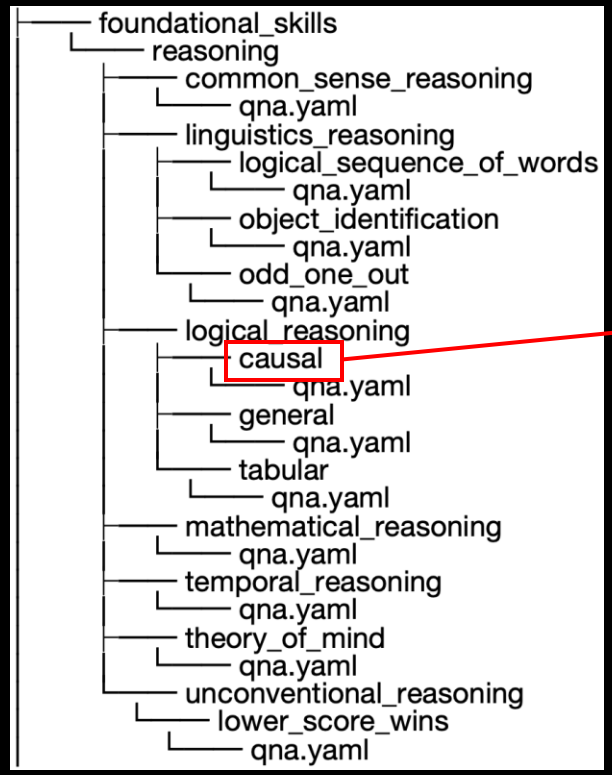
The student model is trained with the curriculum.

Community Contributions

https://instructlab.ai/

# InstructLAB: Models as code?

https://github.com/instructlab




```
created_by: IBM
seed_examples:
- answer: 'While days tend to be longer in the summer, just
because it is not summer
    doesn''t mean days are necessarily shorter.

    '
  question: 'If it is summer, then the days are longer. Are the days
longer if it
    is not summer ?

    '
- answer: 'No, we cannot conclusively conclude that some cats
are black based solely
    on the given premises. The statement "some mammals are
black" does not necessarily
    guarantee that among those mammals are cats.

    '
  question: If all cats are mammals and some mammals are black,
can we conclude that
    some cats are black?
- answer: 'Yes, we can conclude that all squares have four sides
based on the given
    premises.

    '
  question: 'If all squares are rectangles and a rectangle has four
sides, can we
    conclude that all squares have four sides?

    '
task_description: To teach a language model about Logical
Reasoning - causal relationships
```

The InstructLAB project seeks to community source taxonomies of data to continually enrich model families with domain knowledge and skills.

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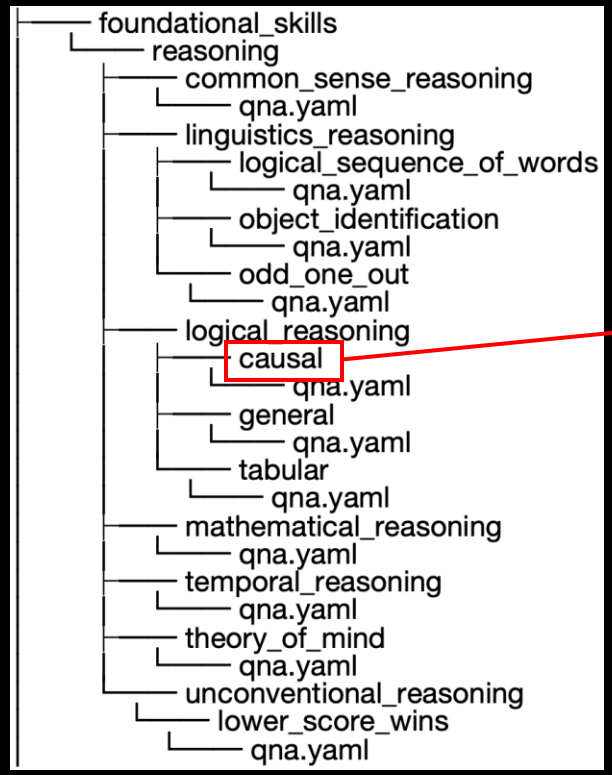



The InstructLAB project see
to continually enrich model

## Can We Make Model Alignment More Like Software Engineering?

STRATEGY TRACK

Bay View

· **Dean Wampler**, AI Alliance and IBM Research

Models are trained by AI experts with significant compute resources, while final model alignment is often done by software engineering teams with less AI expertise, who also want model alignment to fit into conventional software engineering practices.

# AI Alliance: Focus Areas

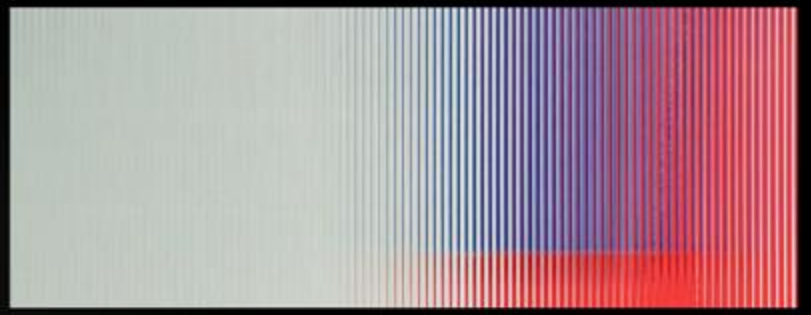
## Advocacy

Supporting regulatory policies that create healthy, sustainable, and open ecosystems for AI.

## Trust & Safety

Creating benchmarks, tools, and methodologies to evaluate and ensure safe, trusted generative AI.

## Applications and Tools

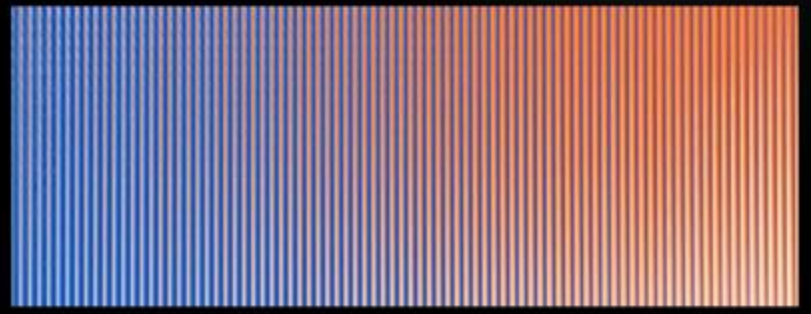


Building the most capable tools for AI model builders and GenAI application developers.

## Foundation Models

Enabling an ecosystem of open foundation models, including those with multilingual and multi-modal capabilities.

## Hardware Enablement



Fostering a vibrant AI hardware accelerator ecosystem through enabling software technology.

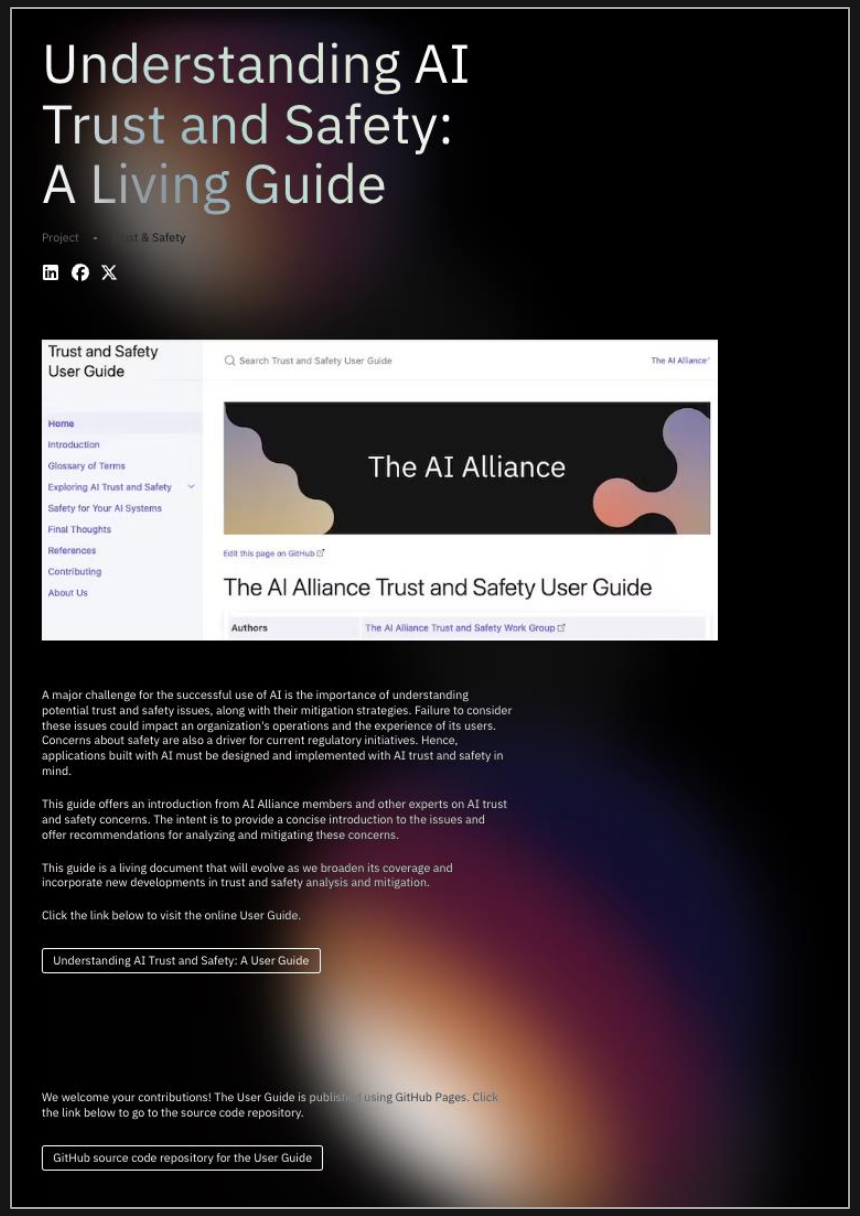
## Skills & Education

Supporting global AI skill-building, education, and exploratory research.

# Safety and Trust Working Group

**Domain-focused Goals**

- Semiconductors
- Climate and Sustainability
- Time Series
- Chemistry and Materials
- Finance
- Legal
- Healthcare



# Open Models and Data Working Group

**Domain-focused Goals**

- Semiconductors
- Climate and Sustainability
- Time Series
- Chemistry and Materials
- Finance
- Legal
- Healthcare


**Major Initiative: Open Trusted Data**

Diverse pretraining and tuning data that is open, trusted, safe and ready for AI.

**Major Initiative: Industry Foundation Models**

Open foundation models enriched with expert knowledge from industry verticals.

# Open Trusted Data Initiative

**Why?**

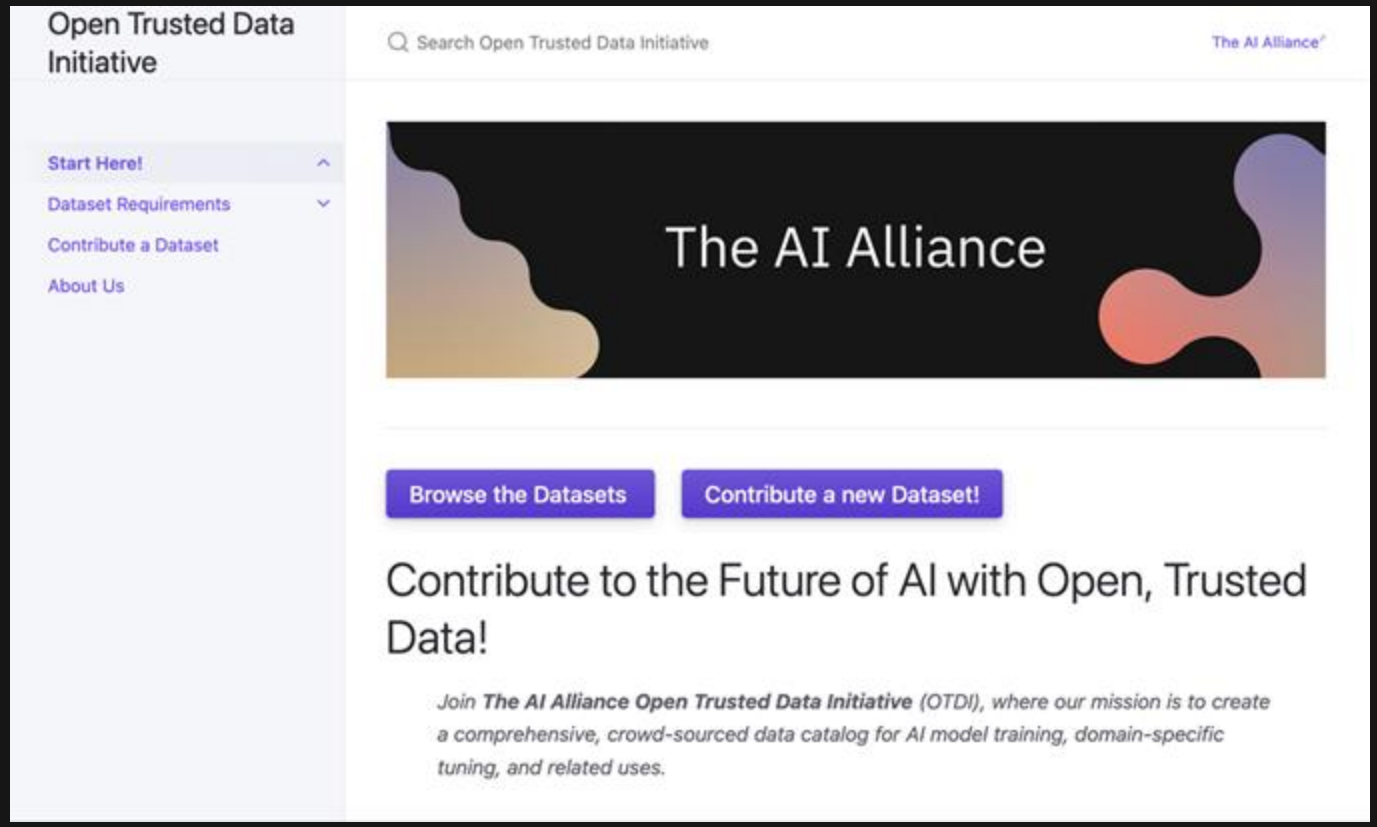
Know your data, build and deploy with confidence.

**What?**

Collection of carefully curated datasets for model training/tuning.

**How?**

Community curation and development of datasets and contributions from industry.




https://the-ai-alliance.github.io/open-trusted-data-initiative/

# Join the AI Alliance as a collaborator




https://thealliance.ai/become-a-collaborator