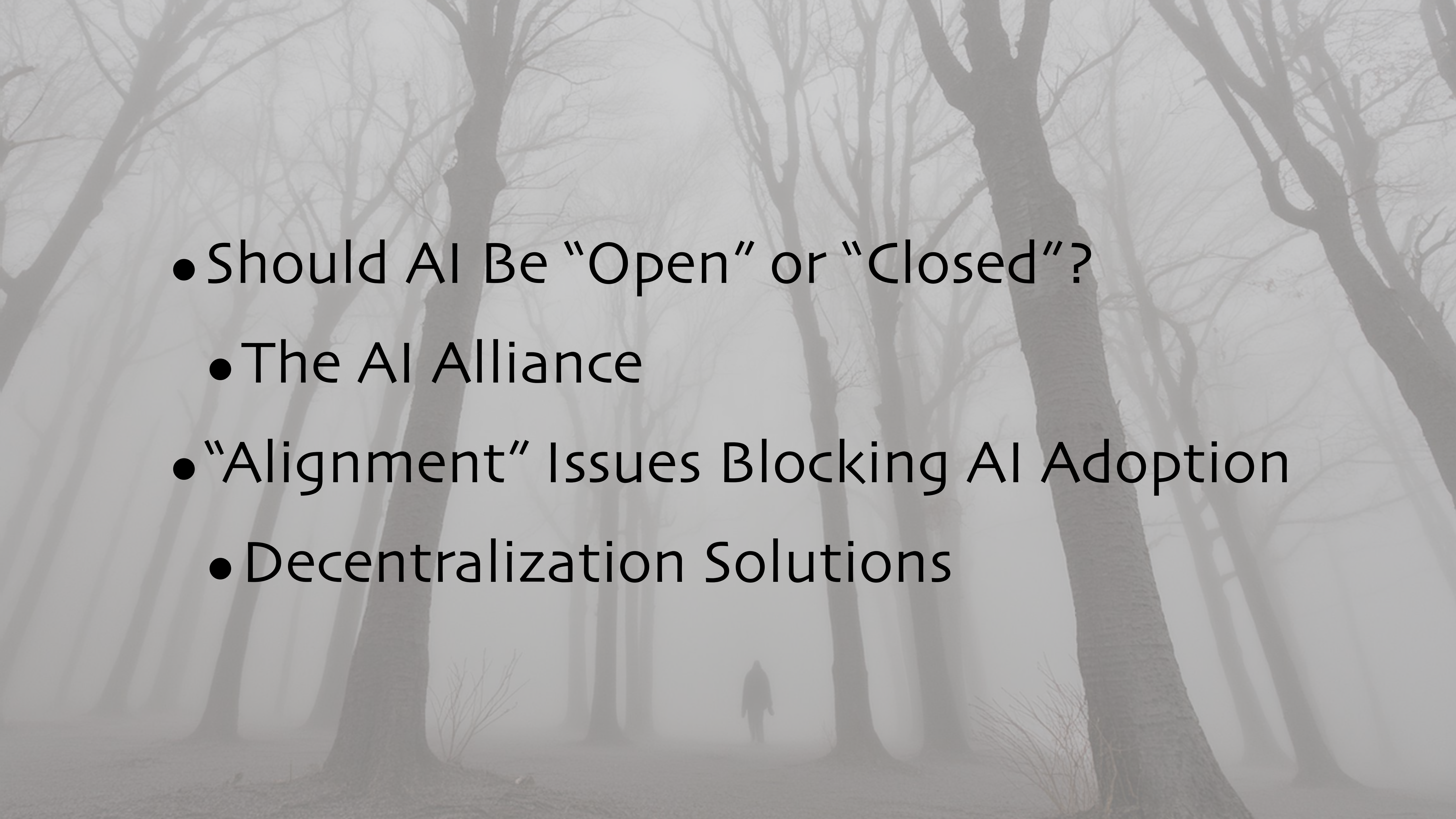# Issues Blocking AI Adoption: A Decentralization Perspective

Summit on Responsible Decentralized Intelligence
- Future of Decentralization and AI,
NYC August 6, 2024

Dean Wampler, Ph.D.
The AI Alliance
IBM Research
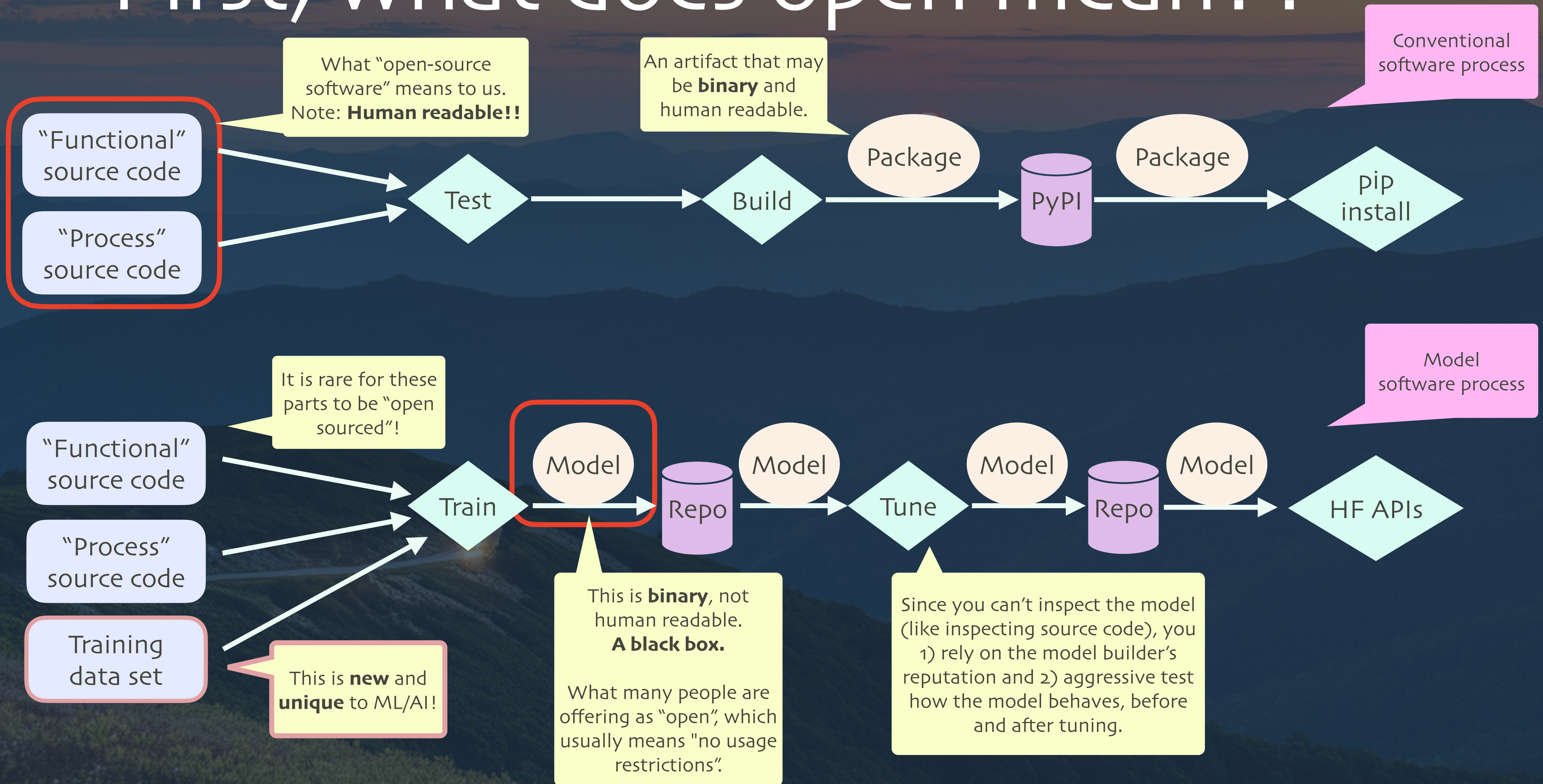thealliance.ai
dwampler@thealliance.ai

deanwampler.com/talks

- Should AI Be "Open" or "Closed"?
  - The AI Alliance
- "Alignment" Issues Blocking AI Adoption
- Decentralization Solutions

Should AI be
"open" or "closed"?

First, what does open mean??

Why Open (as Much as Possible)?

- "The benefits can be summarized as autonomy, transparency, frictionless reuse, and collaborative improvement."
- Although it is common to go from proprietary to open:
  - E.g., Windows/Unix/MacOS → Linux

Do we want AI technology controlled
by a few entities or more widely available?

https://opensource.org/deepdive/drafts/the-open-source-ai-definition-draft-v-0-0-8

The AI Alliance

thealliance.ai

Diagram as of February. >110 Now

U.S. - Indiana
- University of Notre Dame

U.S. - Ohio
- Cleveland Clinic

U.S. - Connecticut
- Yale University

U.S. - New Hampshire
- Dartmouth

Germany
- TU Munich

Japan
- Keio University
- The University of Tokyo
- Citadel AI
- Fenrir Inc.
- Hitachi
- NEC Corporation
- SB Intuitions (Softbank subsidiary)
- Sakana AI
- Sony Group

U.S. - California
- UC Berkeley's College of Computing, Data Science, and Society
- Aitomatic
- AMD
- Anyscale
- Cerebras
- Databricks
- Domino Data Lab
- Intel
- LangChain
- LlamaIndex
- Meta
- Neo4j
- Predibase
- Roadzen
- ServiceNow
- Together AI
- Uber
- Weights & Biases
- Zilliz
- Linux Foundation
- MLCommons
- Partnership on AI

U.S. - Utah
- University of Utah

U.S. - Montana
- Snowflake

U.S. - Illinois
- University of Illinois Urbana-Champaign

U.S. - Pennsylvania
- University of Pennsylvania

U.S. - Massachusetts
- Mass Open Cloud Alliance
- Northeastern University

UK
- Imperial College of London
- Stability AI

France
- Impact AI
- Institut Polytechnique de Paris

Bulgaria
- Institute for Computer Science, Artificial Intelligence and Technology

Switzerland
- CERN
- Ecole Polytechnique Fédérale de Lausanne
- ETH Zurich

Finland
- Silo AI

Poland
- University of Technology in Poznan: Interdisciplinary Centre for Artificial Intelligence and Cybersecurity
- New Native AI

U.S. - Texas
- University of Texas at Austin
- Anaconda
- Applied Digital
- Dell Technologies
- OpenTeams
- Oracle
- Quansight
- NumFOCUS

U.S. - Washington D.C.
- National Aeronautics and Space Administration*
- Seed AI

Spain
- ESADE
- MLOps Community

Senegal
- Kera Health

Israel
- Hebrew University

Vietnam
- FPT Software

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- Cornell University
- NYU
- Rensselaer Polytechnic Institute
- University at Buffalo
- IBM
- Lightning AI
- Hugging Face
- Simons Foundation & Flatiron Institute

Italy
- International Centre for Theoretical Physics

U.A.E.
- Mohamed bin Zayed University of Artificial Intelligence
- Core42

India
- IIT Bombay

Singapore
- A*STAR

U.S. - Virginia
- National Science Foundation*

U.S. - North Carolina
- Red Hat

Australia
- Fast.ai

Six Focus Areas:
1. Education, skills building, and research
2. Trust and safety
3. Tools for building models and applications
4. Hardware portability
5. Open models and datasets
6. Policy and regulations

Spreading knowledge, research

Technical initiatives

Maximize access, with safety

The AI Alliance

A community of technology creators, developers and adopters collaborating to advance safe, responsible AI rooted in open innovation

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- Ecole
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- ETH Zurich

Silo AI

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  for Artificial Intelligence

Senegal
- Kera Health

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U.S. - Virginia
- National Science Foundation*

U.S. - North Carolina
- Red Hat

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- Fast.ai

"Alignment" Issues
Blocking AI Adoption

How can
decentralization help?

Alignment

Alignment - Assuring that the model or AI application works as intended, i.e., that the results satisfy requirements for:

- Usefulness for user goals

- Secure

- Free of bias

- Free of objectionable speech and concepts

- Free of copyrighted material

- Factually correct, i.e., free of hallucinations

Alignment – Assuring the
application works as expected and
results satisfy requirements:

- Usefulness for user
- Secure
- Free of bias
- Free of objection
- Free of copyright
- Factually correct

Alignment is the hardest problem blocking broader adoption of Gen AI.

No successful production system today is just a chat interface and a "bare" model.

Decentralization

- Federated Learning:

    - Align models to local "requirements" (e.g., your face) while preserving privacy

    - Distribute the compute overhead

        - https://arxiv.org/abs/2405.10853

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arXiv > cs > arXiv:2405.10853

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Computer Science > Machine Learning

[Submitted on 17 May 2024 (v1), last revised 19 Jul 2024 (this version, v2)]

The Future of Large Language Model Pre-training is Federated

Lorenzo Sani, Alex Iacob, Zeyu Cao, Bill Marino, Yan Gao, Tomas Paulik, Wanru Zhao, William F. Shen, Preslav Aleksandrov, Xinchi Qiu, Nicholas D. Lane

Generative pre-trained large language models (LLMs) have demonstrated impressive performance over a wide range of tasks, thanks to the unprecedented amount of data they have been trained on. As established scaling laws indicate, LLMs' future performance improvement depends on the amount of computing and

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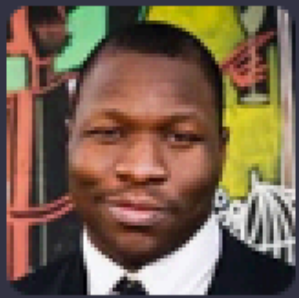
Change to browse by:

- Distributed Ledgers:

  - Secure the data supply chain for training, tuning, and inference

Decentralization

- Distributed Ledgers:

  - Secure the data supply chain for training, tuning, and inference

Governance of the supply chain:
While most AI users currently accept "open" models with opaque training data lineage, that will likely change.

What Actually Works?

Dare Obasanjo
@carnage4life@mas.to

There is a big difference between tech as augmentation versus automation. Augmentation (think Excel and accountants) benefits workers while automation (think traffic lights versus traffic wardens) benefits capital.

LLMs are controversial because the tech is best at augmentation but is being sold by lots of vendors as automation.

Jun 10, 2024, 10:31 · 🌐 · Ivory for iOS · 🔁 109 · ⭐ 188

Emphasize Augmentation

- Keep humans in the loop, but improve productivity:
  - Distilling information more quickly
  - Translating between human and "domain languages"
    - SQL, Python, but also domain jargon (medical, finance, science, …)
  - Use complementary tools
  - Use deterministic tools for factual accuracy, logical reasoning, and planning
  - What Agent frameworks enable

Emphasize Augmentation

A.I. Needs Copper. It Just Helped to Find Millions of Tons of It.

An exploration site run by KoBold Metals in Chililabombwe, Zambia, in June. Zinyange Auntor... York Times

The deposit, in Zambia, could make billions for Silicon Valley, provide minerals for the energy transition and help the United States in its rivalry with China.

> Train model with geological and mining data to predict where the copper is likely to be

https://www.nytimes.com/2024/07/11/climate/kobold-zambia-copper-ai-mining.html

Thank You!

- Visit thealliance.ai
- Let me know what you think!
  - dwampler@thealliance.ai
  - Mastodon and Bluesky: @deanwampler
  - Other talks: deanwampler.com/talks: use this ➡

deanwampler.com/talks