LAMARR
INSTITUTE FOR MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

# Resource-Aware ML Meetup 2026 – Day 1

Raphael Fischer | Lamarr Institute | TU Dortmund University | Young AI Leaders Dortmund

Partner institutions:

technische universität dortmund

Fraunhofer IAIS

UNIVERSITÄT BONN

Fraunhofer IML

Institutionally funded by:

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# Welcome to the Meetup!

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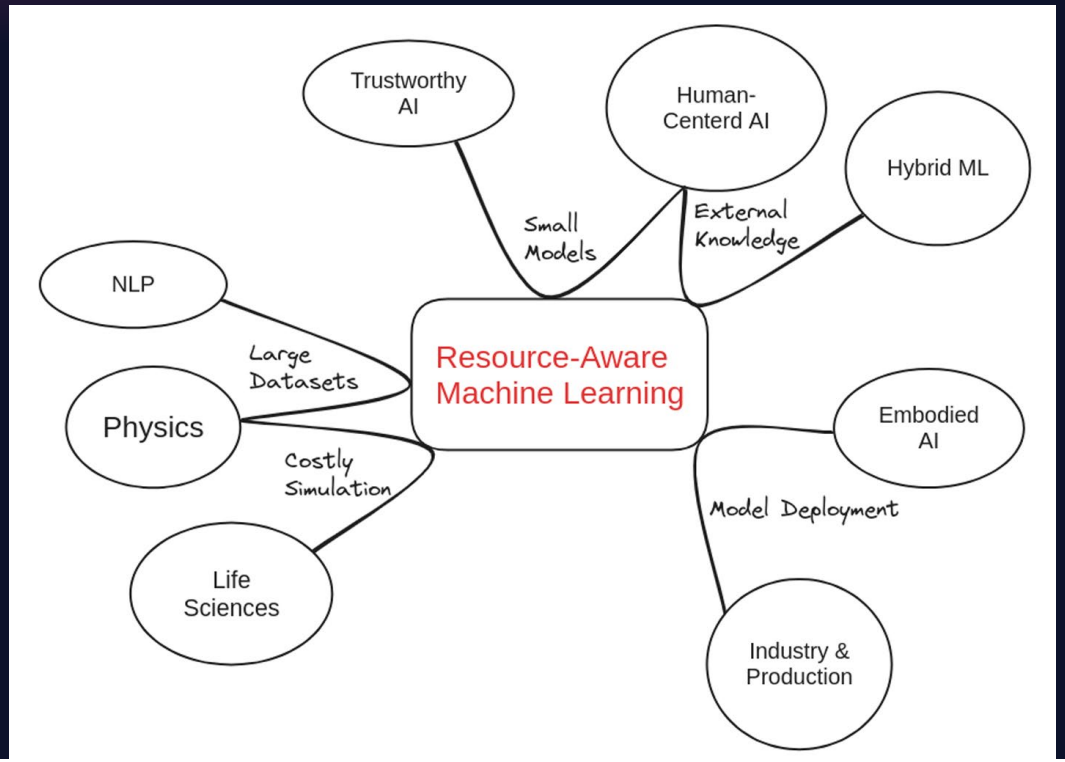


We now have 1.5 days to discuss how our work connects to resource-awareness.
It is all about getting to know each other, and identifying opportunities for collaboration. Let's do this!

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All information, materials, and notes are collected in the **Indico Event**.

The full **program** will take place in different parts of this building (except for tonight's dinner).

Need a room for privacy, or have other questions? Reach out to **Raphael, JJ & Youssef**.

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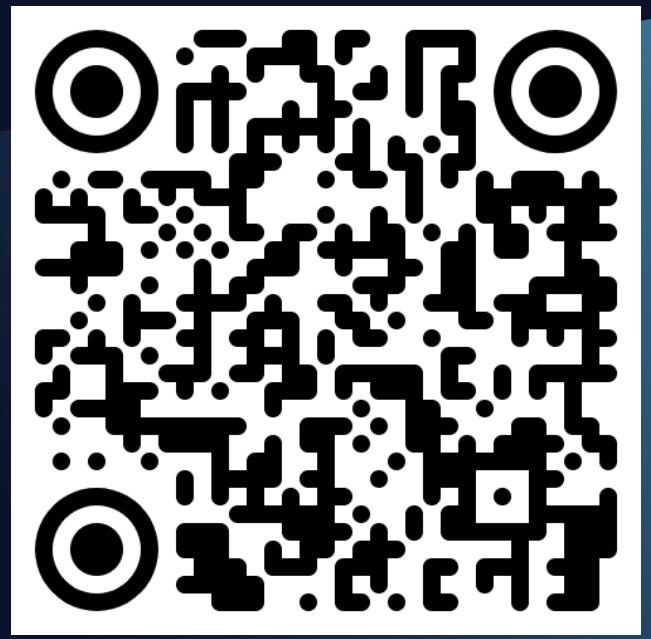

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# Who are we?

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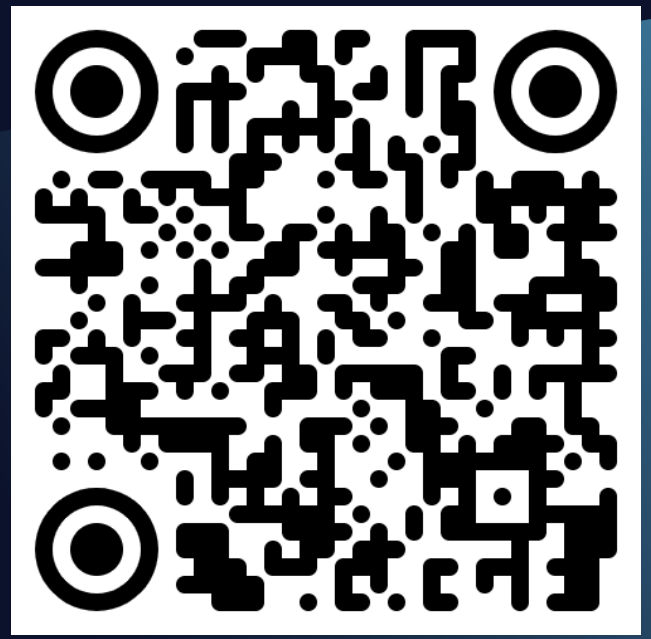

# RAML – Areas within an Area?

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Hardware & Sensors

Training & Optimization

Benchmarking & Reporting

Theory & Software

Deployment & Optimization

Services & Applications

# RAML – Areas and their Resources

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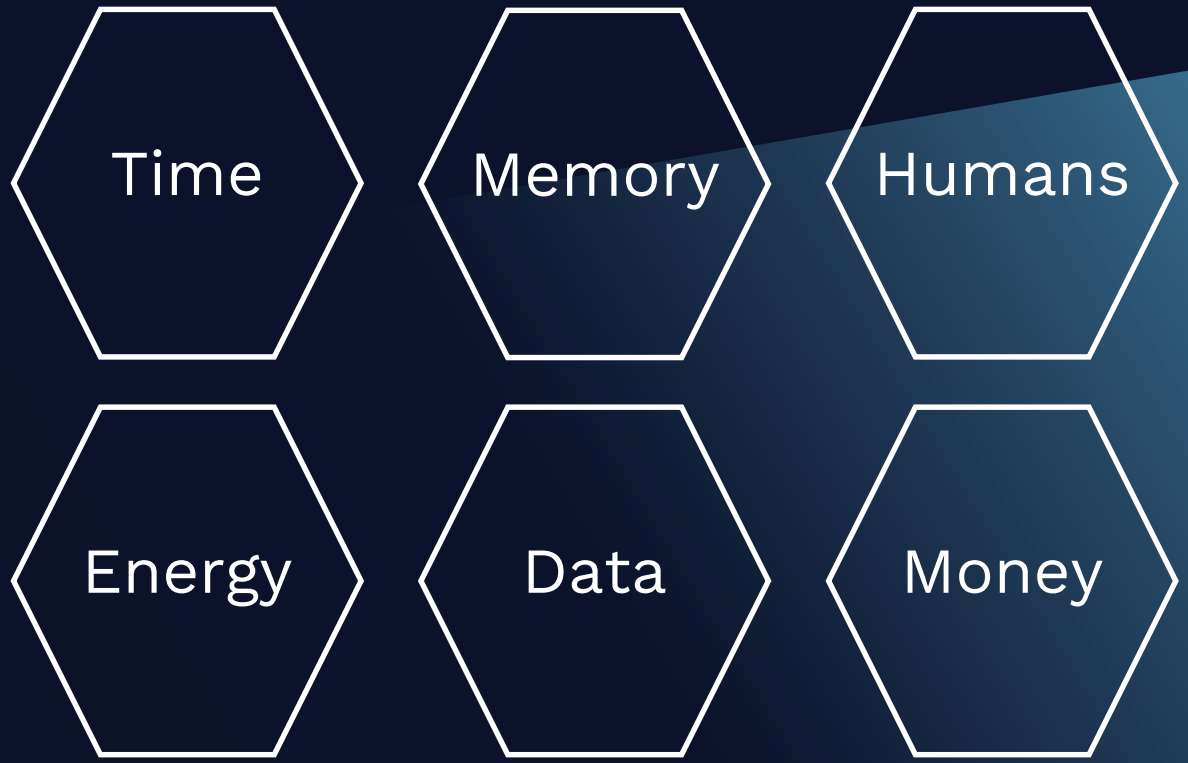

# RAML – Important Conferences & Deadlines

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We already established the diversity of RAML.

But where do you meet your community?

# RAML – Talking Points

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Lamarr Institute's PR team prepares for engaging with and responding to public AI debates that connect to our research.

They need our research expertise. 🤝 Our expertise needs visibility.

So - what are the talking points and our positions in RAML?

Note: Carolin Winter and Ann-Kathrin Oster will join us later.

# RAML – Talking Points

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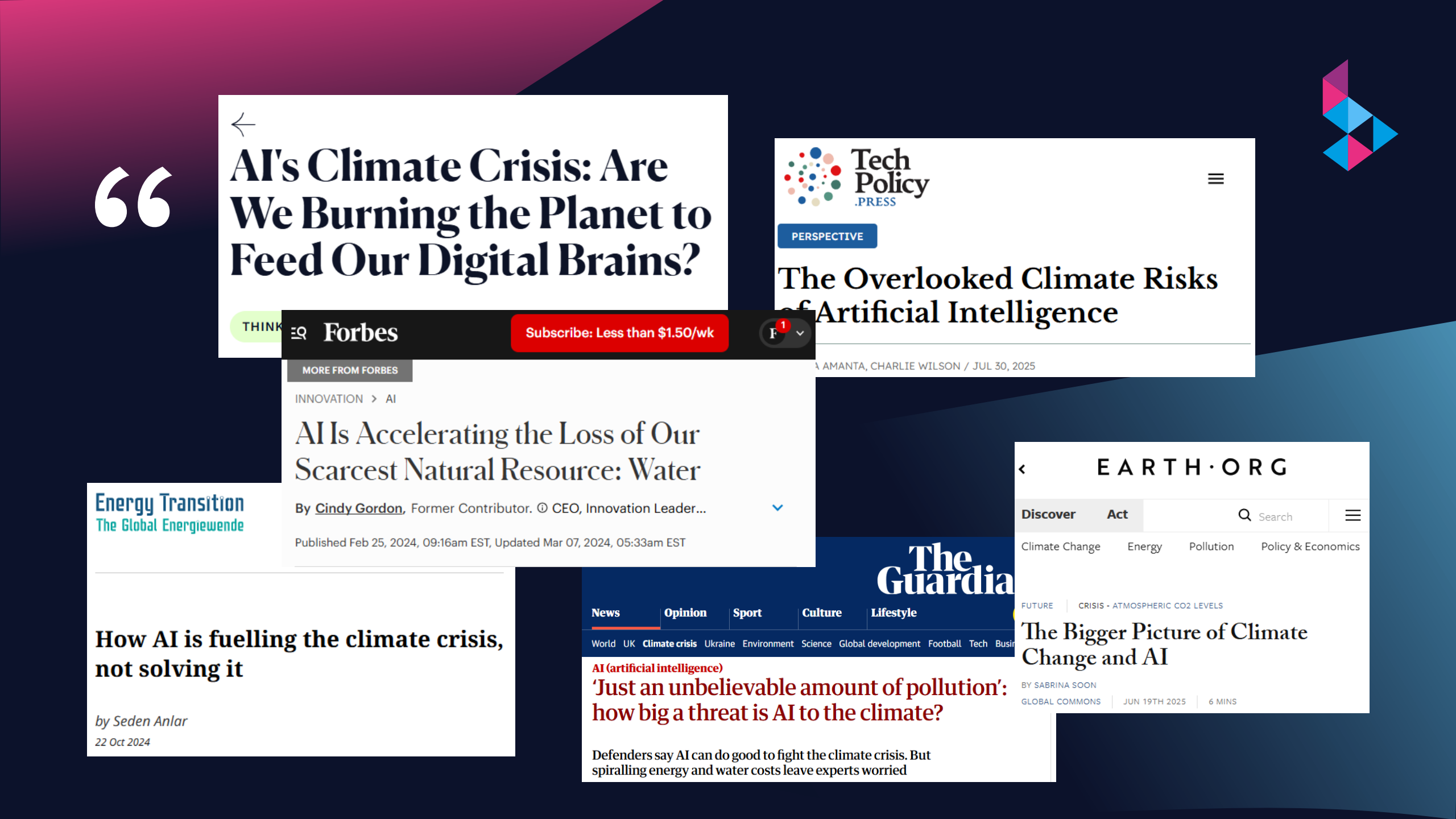
Lamarr Institute's PR team prepares for engaging with and responding to public AI debates that connect to our research.

Example talking points:

1. Energy efficiency needs to become central evaluation focus.
2. Responsible AI necessitates quantification of resource demand.
3. Power concentration in hardware & data challenges innovation.

[Filho et al. 2023] (Nature)


AI's Climate Crisis: Are We Burning the Planet to Feed Our Digital Brains?
THINK
Tech Policy .PRESS
PERSPECTIVE
The Overlooked Climate Risks of Artificial Intelligence
AMANTA, CHARLIE WILSON / JUL 30, 2025
Forbes
Subscribe: Less than $1.50/wk
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AI Is Accelerating the Loss of Our Scarcest Natural Resource: Water
By Cindy Gordon, Former Contributor. CEO, Innovation Leader...
Published Feb 25, 2024, 09:16am EST, Updated Mar 07, 2024, 05:33am EST
Energy Transition
The Global Energiewende
How AI is fuelling the climate crisis, not solving it
by Seden Anlar
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News
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Lifestyle
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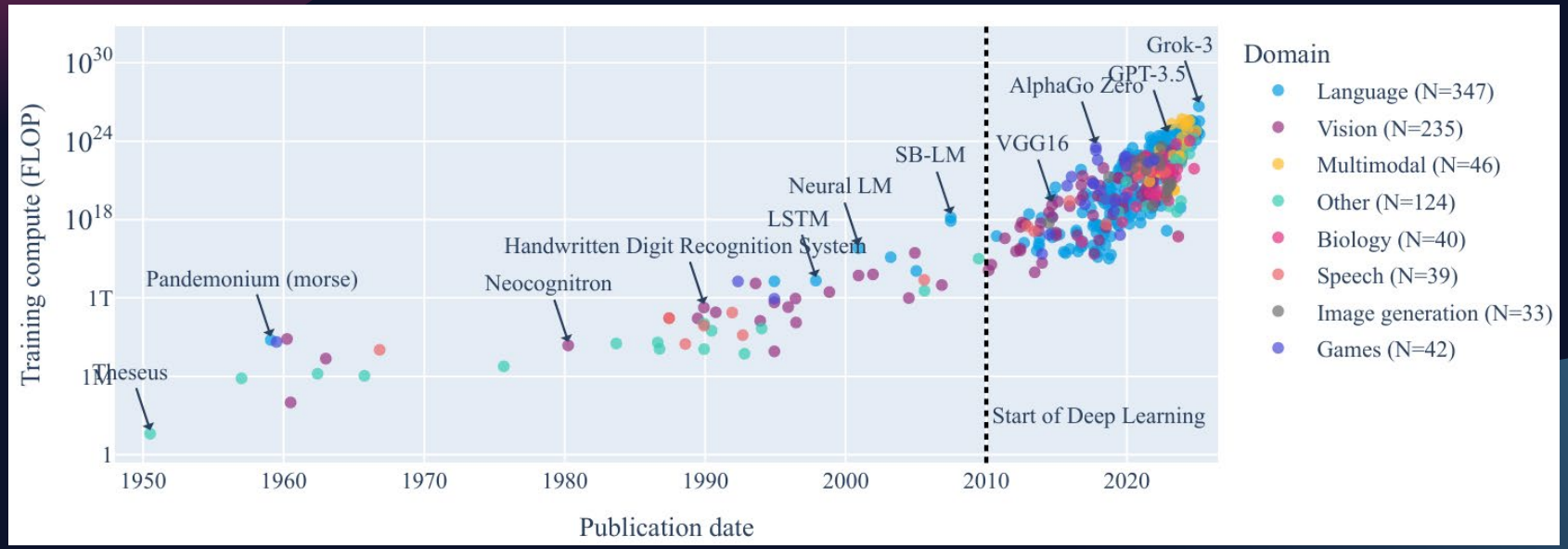
AI (artificial intelligence)
'Just an unbelievable amount of pollution': how big a threat is AI to the climate?
Defenders say AI can do good to fight the climate crisis. But spiralling energy and water costs leave experts worried
EARTH·ORG
Discover
Act
Search
Climate Change
Energy
Pollution
Policy & Economics
FUTURE
CRISIS - ATMOSPHERIC CO2 LEVELS
The Bigger Picture of Climate Change and AI
BY SABRINA SOON
GLOBAL COMMONS
JUN 19TH 2025
6 MINS




[Fischer 2025a / Sevilla et al. 2022] (Epoch AI)

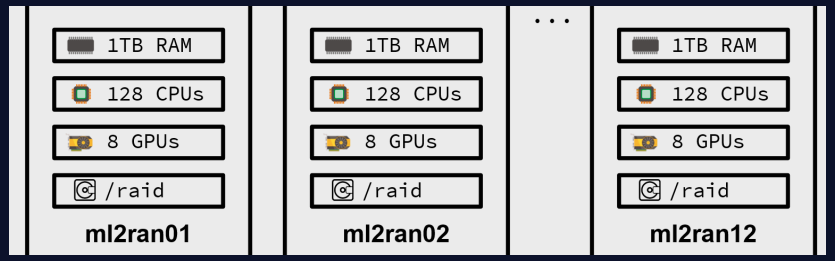
→ ***Initiate a paradigm shift in reporting!*** [Fischer et al. 2024]
This allows us to develop and use AI in sustainable ways!

→ ***Challenge the bigger-is-better paradigm!*** [Varoquaux et al. 2025]
This should be an important joint effort at Lamarr Institute!

To be **resource-aware** and **trustworthy**, we have to inform on the **energy-versus-quality performance** of our methods!
Assessing this trade-off becomes easier thanks to

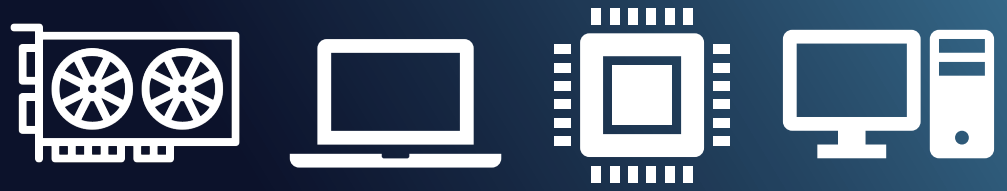
*github.com/lamarr-institute/lamarr-energy-tracker*

LET




## Computing on the Cluster?

Automatic tracking of energy consumption with personalized reports → launching soon!



## Computing on Custom Setup?

Use the LET library for tracking and reporting the energy consumption of your experiments!

*github.com/lamarr-institute/lamarr-energy-tracker*

# LET - Lamarr Energy Tracker

A simple wrapper around CodeCarbon for tracking and reporting local energy consumption from Python.

## Features

- 🧩 Simple extension to CodeCarbon software
- 🏯 Three lines of code to report on environmental impacts of your research experiments
- 💚 Help to make Lamarr Institute more resource-aware

## Installation

As a Python library, you can simply install it by running

```
pip install lamarr-energy-tracker
```

*github.com/lamarr-institute/lamarr-energy-tracker*

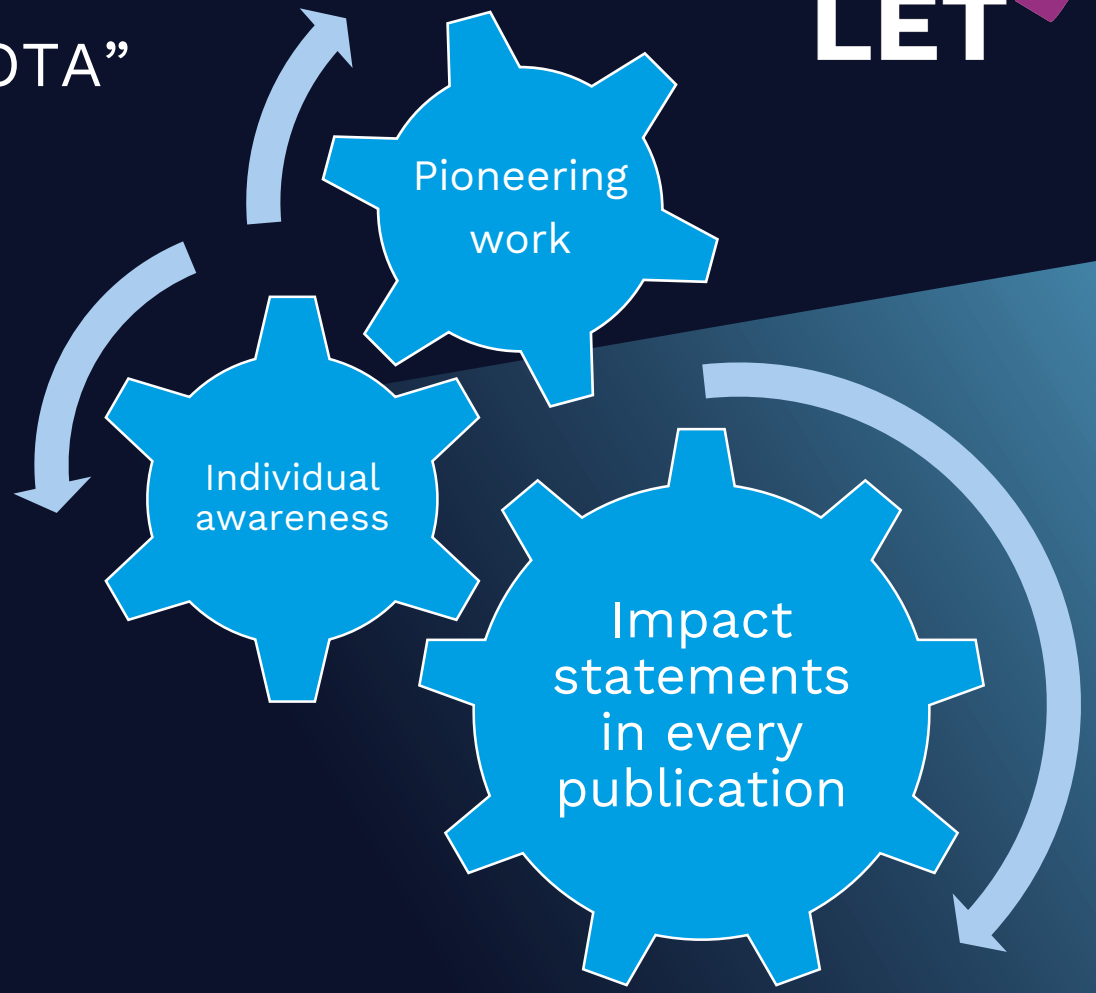
```python
from lamarr_energy_tracker import EnergyTracker

# Either use as a context manager
with EnergyTracker(project_name="your_research_project") as tracker:
    # Your resource-heavy code here
    pass

# Or manually
tracker = EnergyTracker(project_name="your_research_project")
tracker.start()
# Your resource-heavy code here
tracker.stop()
```

***"Using CodeCarbon 3.0.8, the energy consumption of running all experiments on an Intel(R) Core(TM) i7-10610U CPU is estimated to 0.135 kWh. This corresponds to estimated carbon emissions of 0.051 kg of CO2-equivalents, assuming a carbon intensity of 380 gCO2/kWh."***

*github.com/lamarr-institute/lamarr-energy-tracker*

## Resource-awareness benefits:

- You gain a new understanding of “SOTA”
- You can discuss the efficiency and sustainability of your research
- Your work might become more environmentally friendly
- We can connect different research groups @ Lamarr
- We might become a pioneering research institute for Green AI
- We can perform meta-studies on compute demand

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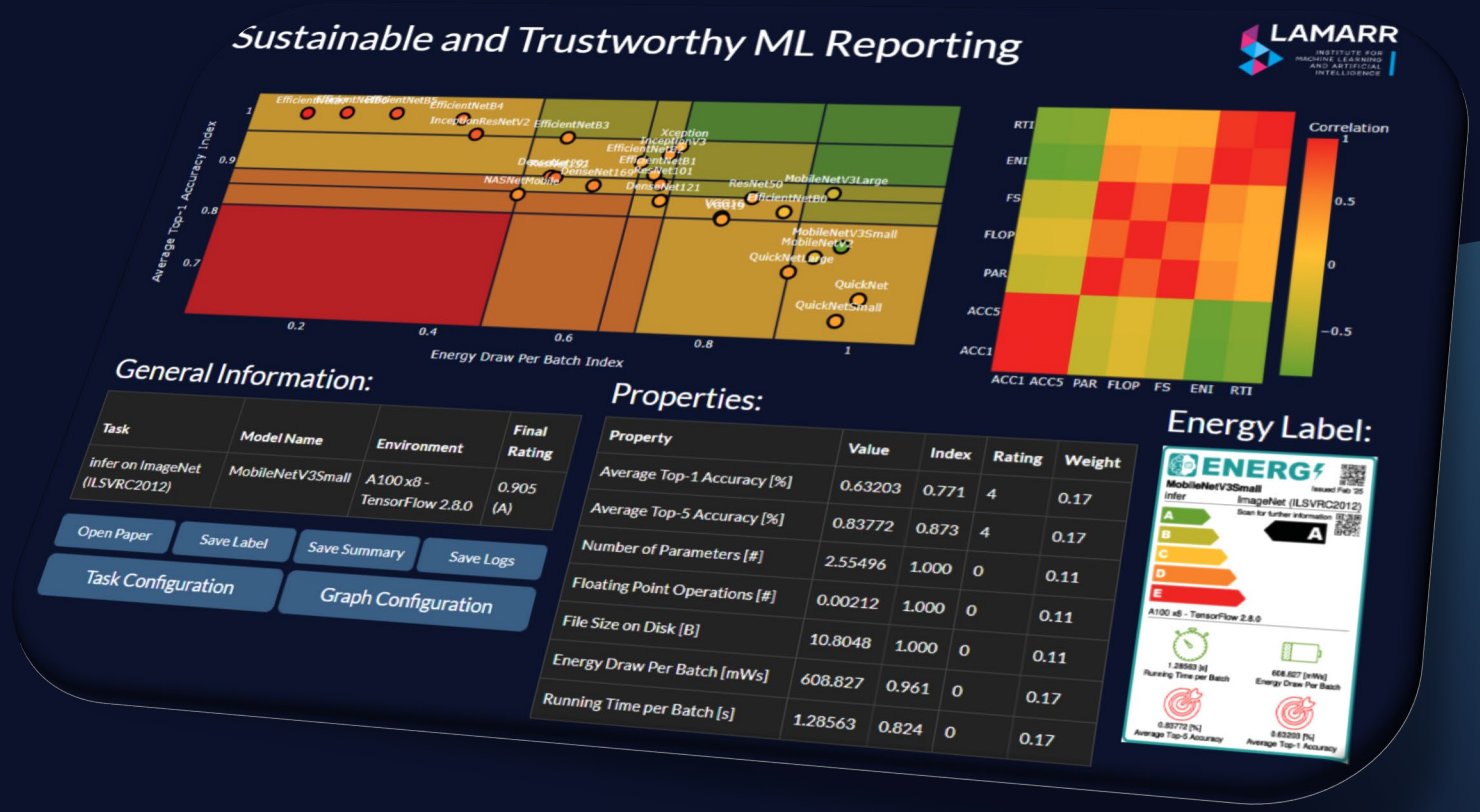
# Integrate LET with Mlflow & STREP

To investigate the multi-dimensional performance of AI models!

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# TL;DR - LET's all become more resource-aware @ Lamarr!

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LET

Questions or Feedback?
**Get in touch with us!**

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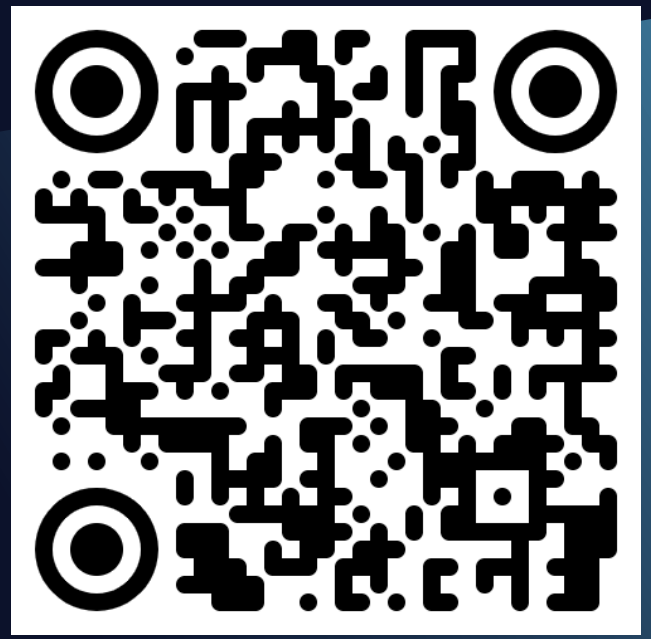

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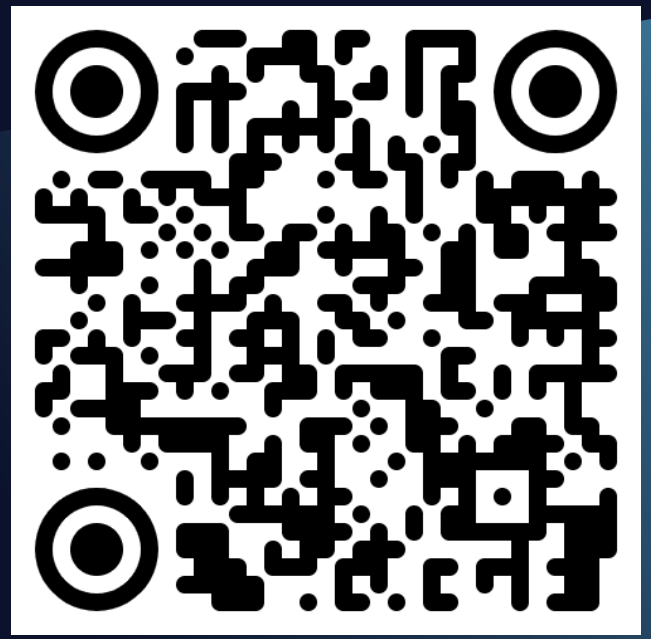

# Interactive Clustering

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We start with characterizing everyone's work along specific dimensions.

Individually, write down as many keywords as you like:

*Types of learning tasks (blue), data (green), methods & theories (red), resources (yellow), hardware (pink), software (orange), other aspects (white)*

Afterwards, we interactively cluster them, to identify structures and collaboration possibilities in the multidimensional space of our work!

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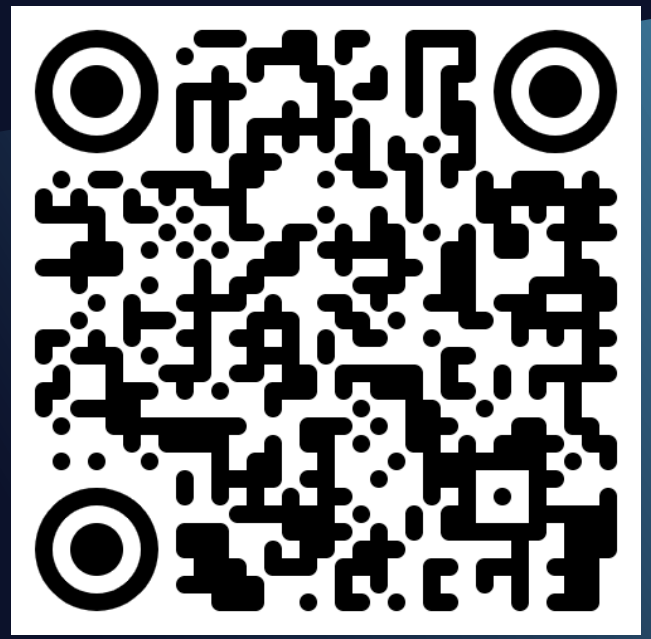

# Wrap-Up Day 1

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- **Area Organization** (Proposal to be discussed):
  - Mattermost for central communication
  - Central slide deck!
  - PI & Postdoc bi-monthly area coordination meeting at 11:00
  - Monthly seminar at 11:30 → 30 min freestyle on last interesting paper
  - Last / first DAY (tbd) of each month
  - Central Area Meetups as part of Lab Visits & Co
- Who is interested in identifying and answering **Talking Points in RAML?**
- Any open **questions** or feedback?

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# See you at dinner (18:30) or tomorrow (9:00)!

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# Resource-Aware ML Meetup 2026 – Day 2

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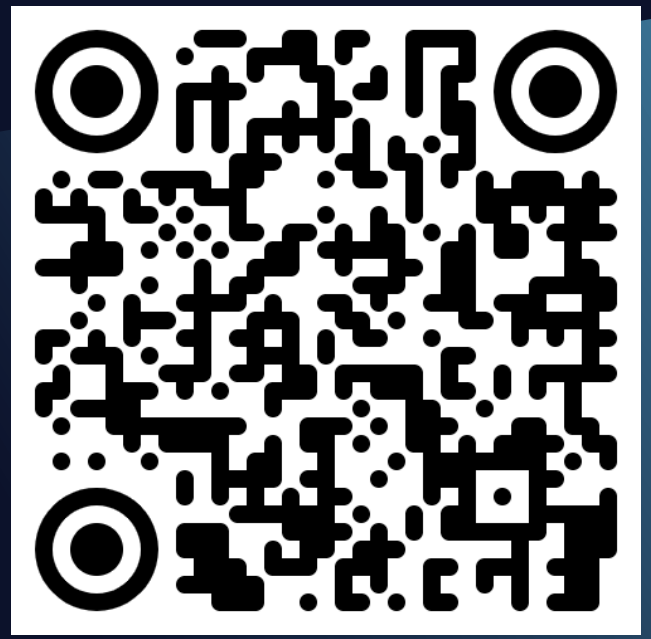

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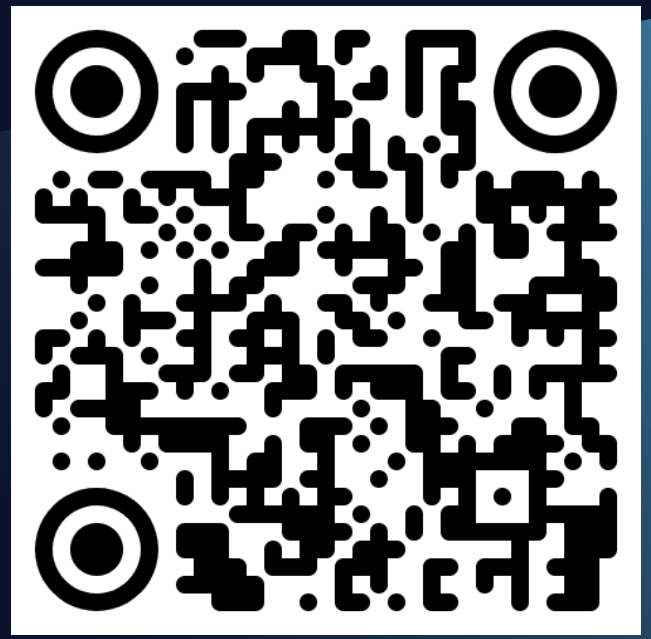

# Clustered Dating

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Yesterday we identified some topic clusters - today we have time for discussing them in more depth! Over two sessions, attend any topic you like!

| | **11:00** | **11:30** |
|---|---|---|
| Co-working 1: | Transformers & LLMs | Probabilistics |
| Seminar: | Time Series | Tabular Data |
| Deep Dive: | Optimization | Performance Trade-Offs |
| | Sustainable Development? | |

Please try to **mix and balance**. And keep the **idea building** afternoon in mind ;)

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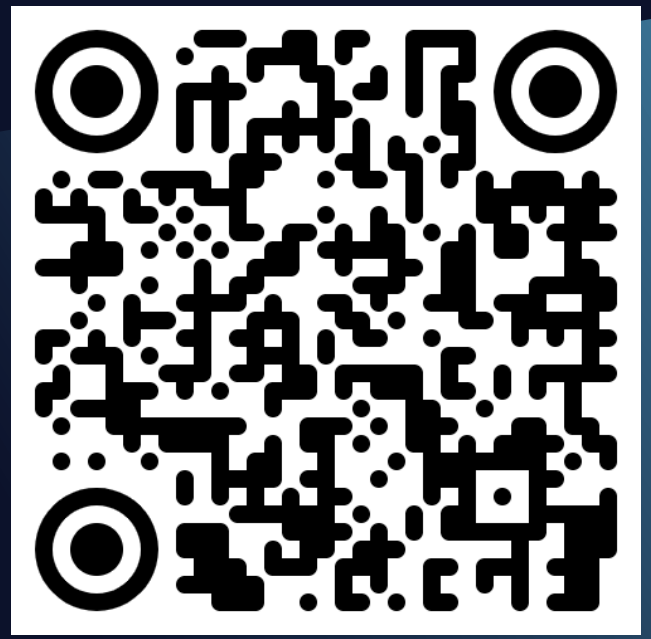

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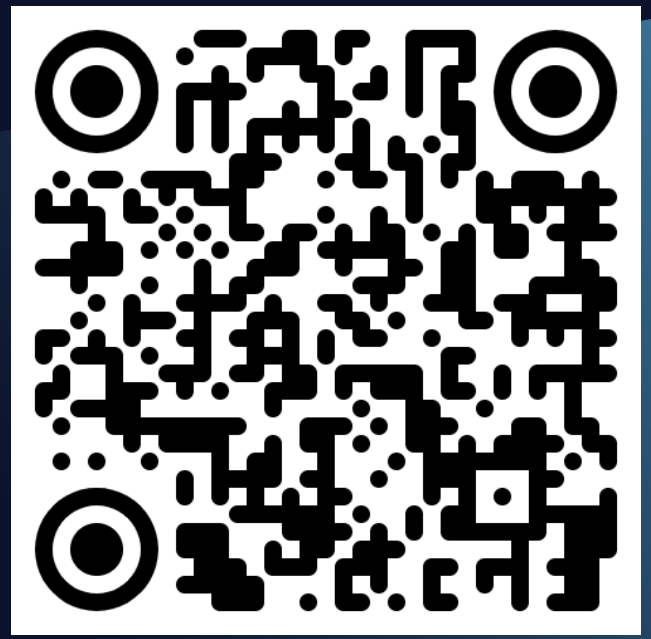

# Idea Building & Pitching

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Hopefully, some rough ideas were sparked during the Meetup!

Please gather in groups (3-5 people) and prepare a short idea pitch (~5 min).

Any topic, presentation style and outcome (paper, workshop, ...) is welcome!

**13:00:** Idea building

**13:45:** Pitch & Feedback Round

Feel free to spread across the available rooms!

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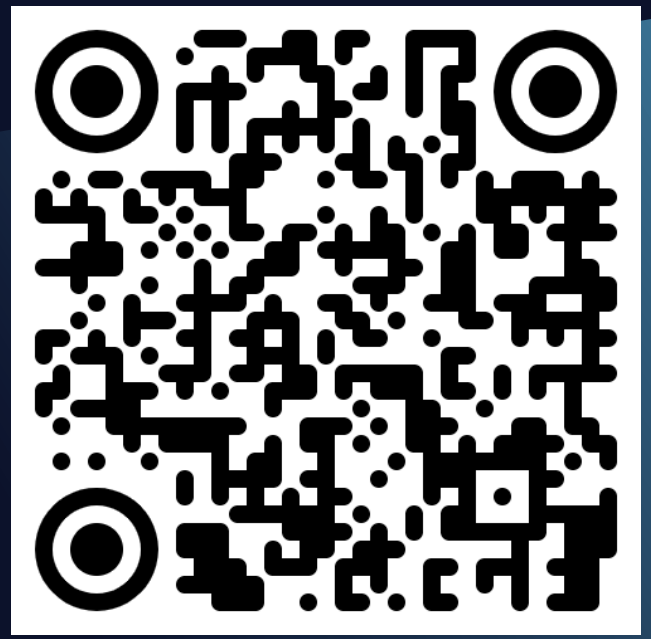
| 13:00 – 14:15 | Idea Building & Pitching |
| | *Wrap–Up & End of Program* |



# Wrap-Up Day 2

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- Finalize **Area Organization**:
  - Meetings?
  - Vision & Strategy?
  - Does everybody feel represented and included?
- Follow-Up on Ideas from this Meetup?
- **Talking Points** of our Area?
- Open **questions** or feedback?

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# See you soon!