

# The Social Costs of AI: Updates

- Aimee Van Wynsberghe
- Tim Mensinger
- Stefan Höse

**University of Bonn**

# Today's agenda

- Current Status
- Results
- Lessons Learned
- Next Steps

# Current Status

# Project status (last presentation)

- Build test computing infrastructure ✓
  - Setup energy measurement architecture ✓
  - Setup computing environment ✓
  - Run BERT model ⚙️
- Build real computing infrastructure ✗
  - Get new computing hardware ✗
- Analyze energy data ✗

# Run BERT model

- No proper hardware yet
  - Use existing infrastructure
- No proper software for model training
  - Find software to train BERT base
  - Realize our existing hardware is too old
- Will come back to this task ⚙️

# Build computing infrastructure

- Buy professional hardware system
  - Delivered: 30. March 2022
- Realize there are problems with the system: 4. April 2022
  - Try to fix them, does not work
  - Contact customer support
- Return device: 1. June 2022

# Build computing infrastructure (2)

- Return device: 1. June 2022
- Get repaired device back: 4. July 2022
  - Realize its still broken...
  - Contact customer support again
- Return device: 25. August 2022
- Repaired device arrives: 2. September 2022
  - It kinda works! 🎉

# Build computing infrastructure (Back-Up Plan)

- Existing hardware was too old
  - Specifically: GPU was too old
- Replace this component: 17. June 2022
  - Works perfectly!
- Build computing infrastructure ✓
- Run BERT model ✓



# Run BERT model training

- Wikipedia
  - $\approx$  1 billion words and symbols
  - Training time: 1 day
- BookCorpus
  - $\approx$  11,000 books (read 10 books per month for 100 years)
  - $\approx$  10 billion words and symbols
  - Training time: 6 days

# Results

# **What can our *AI* model do?**

## **Notebook example**

# Energy consumption

- Strubell et al. (2019)
  - 1,500 kwh
  - 2,500 km (driven by average car)
- AI Lab
  - 40 kwh
  - 70 km (driven by average car)

**Whats Next?**

# Lessons Learned

- Always have a back-up plan
- Be less patient in B2B contexts

**Thank you!**

---

**Questions?**