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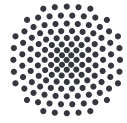

University of Stuttgart
Germany

Knowledge-Enhanced Machine Learning

Analytic Computing

Amin Totounferoush

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ellis-stuttgart.eu

Who Am I

Amin Totounferoush

Analytic Computing, University of Stuttgart

Causal Inference and Discovery, Knowledge Graphs

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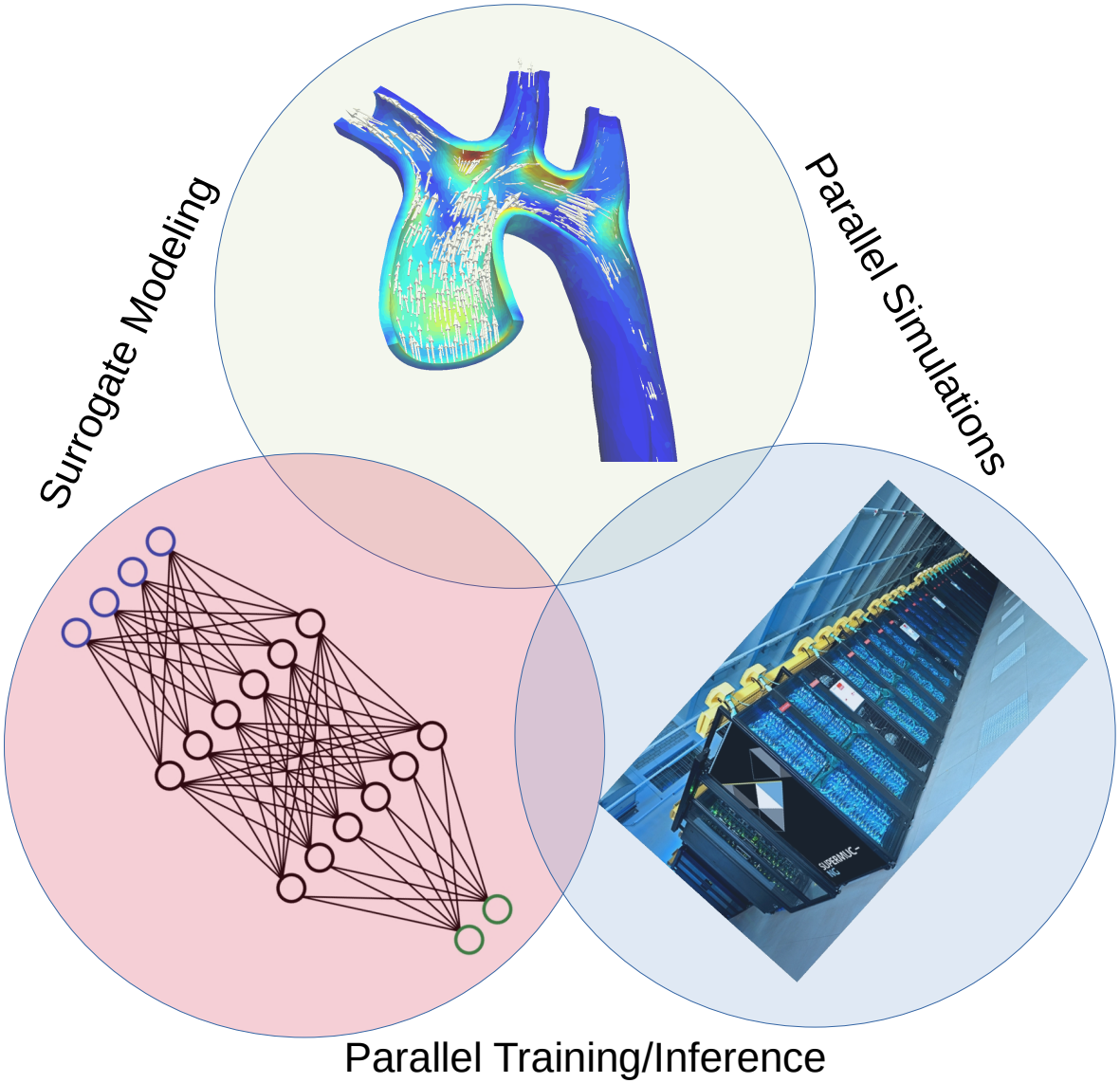
Previous researches



What is the problem?

THE GREAT AI RECKONING

Deep Learning's DIMINISHING RETURNS

The cost of improvement is becoming unsustainable

DEEP LEARNING IS NOW being used to translate between languages, predict how proteins fold, analyze medical scans, and play games as complex as Go, to name just a few applications of a technique that is now becoming pervasive. Success in those and other realms has brought this machine-learning technique from obscurity in the early 2000s to dominance today. • Although deep learning's rise to

BY NEIL C. THOMPSON, KRISTJAN GREENEWALD, KEEHEON LEE & GABRIEL F. MANSO

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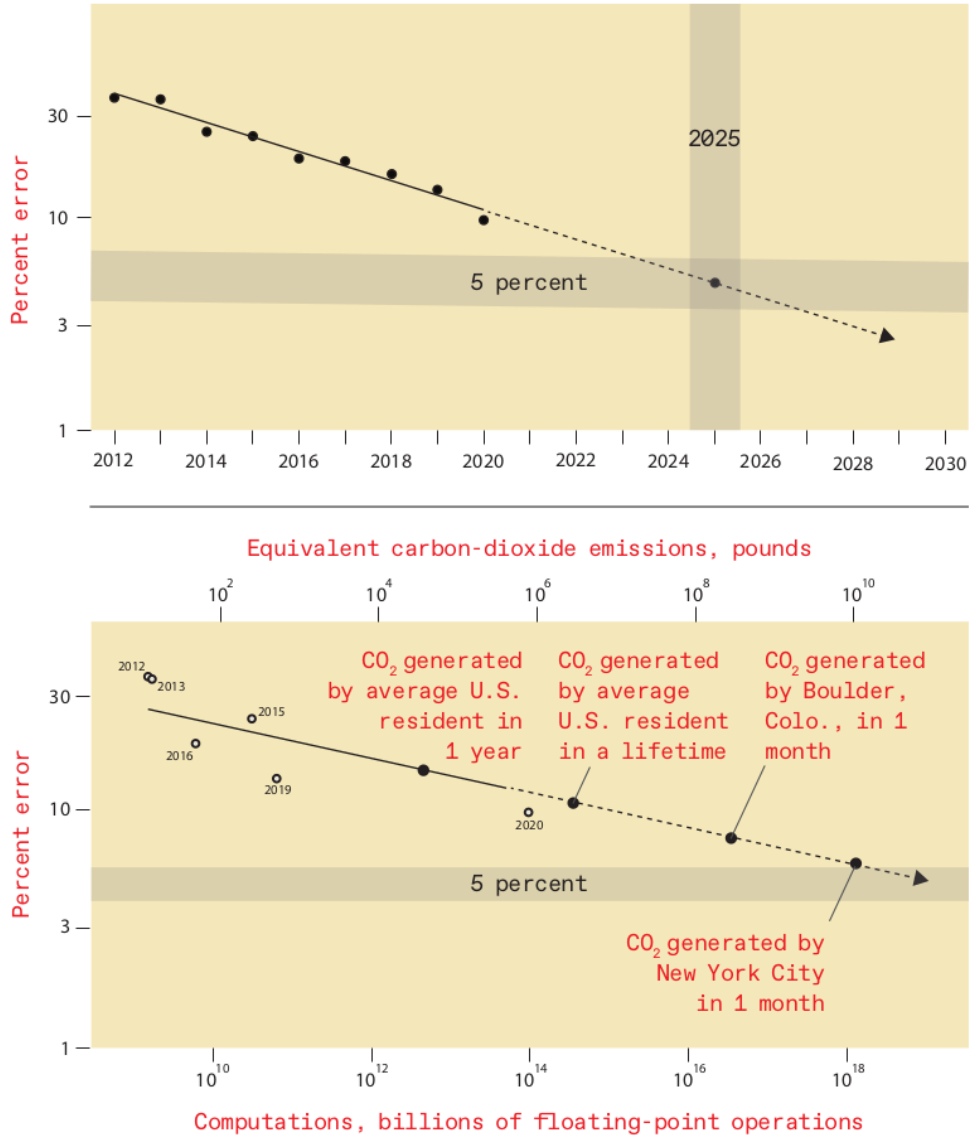
  $\rightarrow k^4$ more computation
  (k^9 in practice)
-
-



Thompson, Neil C., et al.

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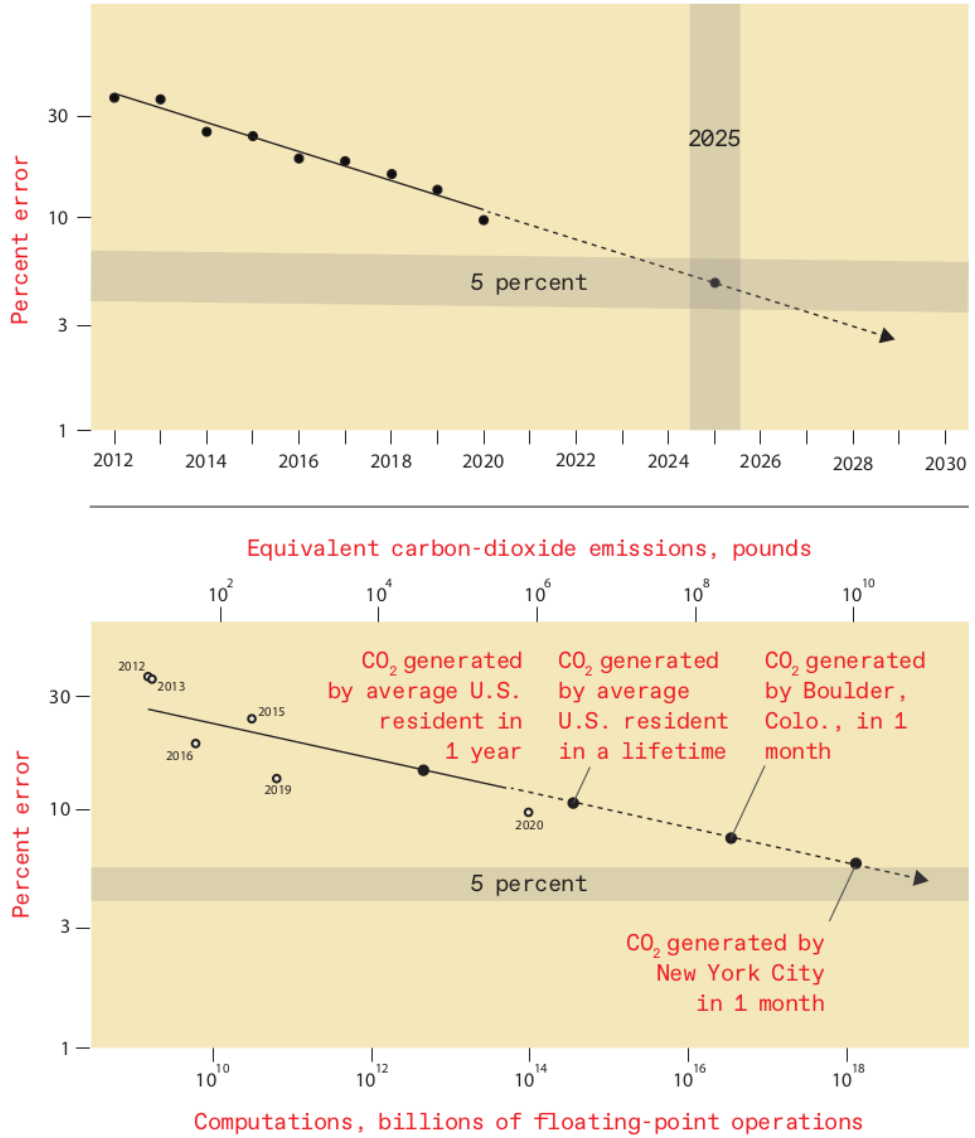

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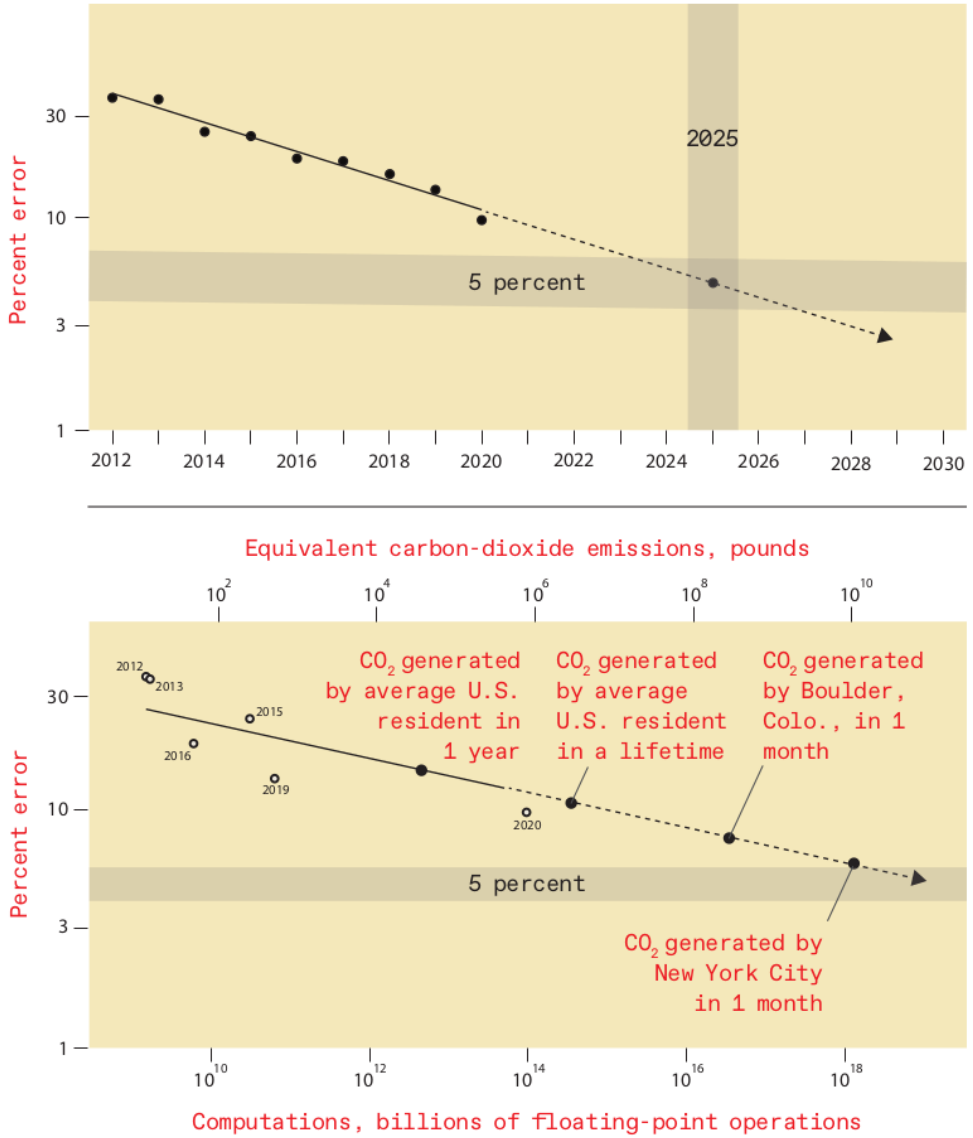
- 95% accuracy costs \$100 billion.
- Re-training is being avoided due to high cost.



Thompson, Neil C., et al.

What are the possible solutions?

Hardware optimization:

1-GPUs, FPGAs, TPUs

2-Quantum computing?

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Enjoy the kick-off event!

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