mimic

November 23. 2026

Ben Forrai
ben.forrai@mimicrobotics.com

Zurich, Switzerland

What does excellence mean in frontier robotics?

BEN FORRAI - CO FOUNDER & ROBOTICS GUY @ MIMIC

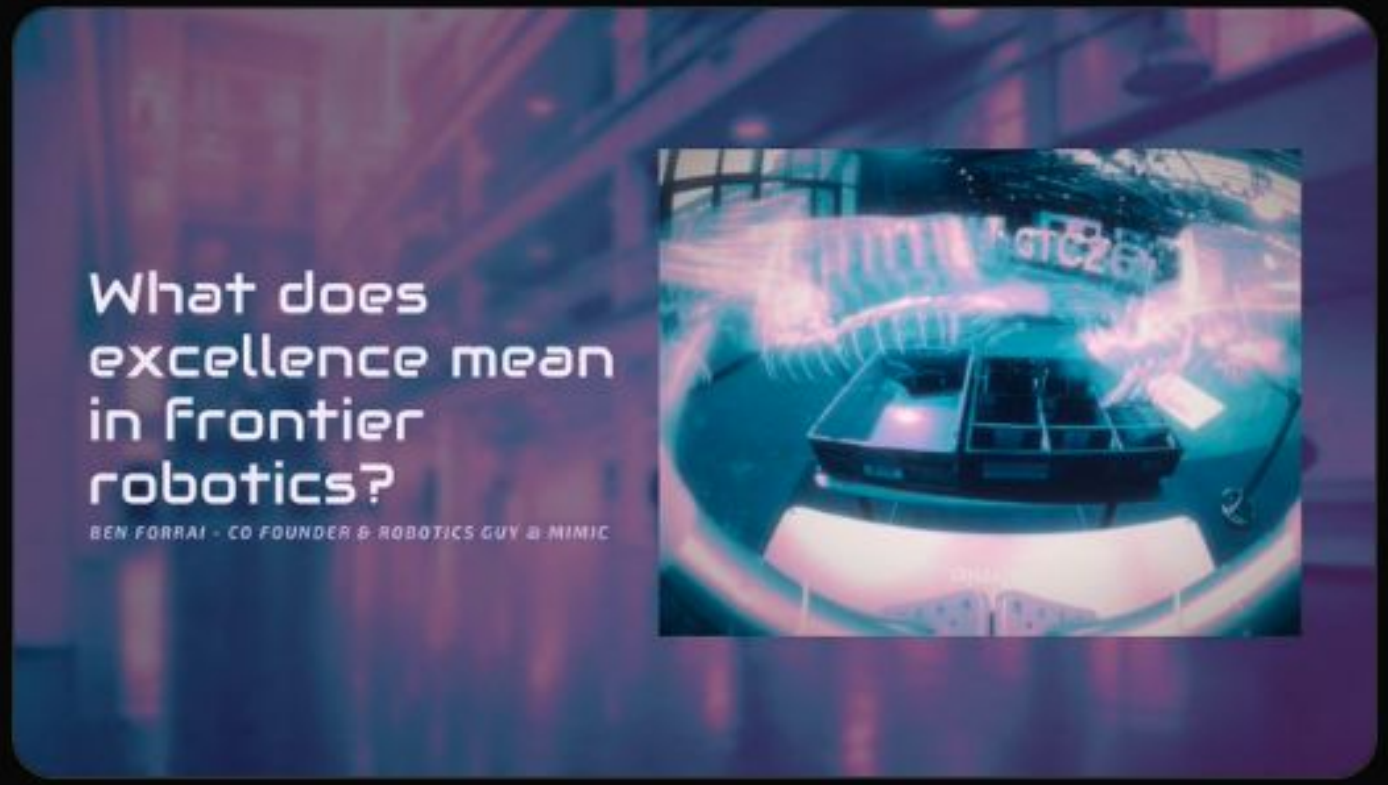


Part 0: Workshop Manual

Benedek Forrai @forraibotics · 12h

as posted before: every in premier unis, robotics talent is insanely bimodal. you're either goated or you're cooked.

tomorrow 14:15 CET we'll be talking at eth's real world robotics course and cover what is in between. public stream link soon



aless

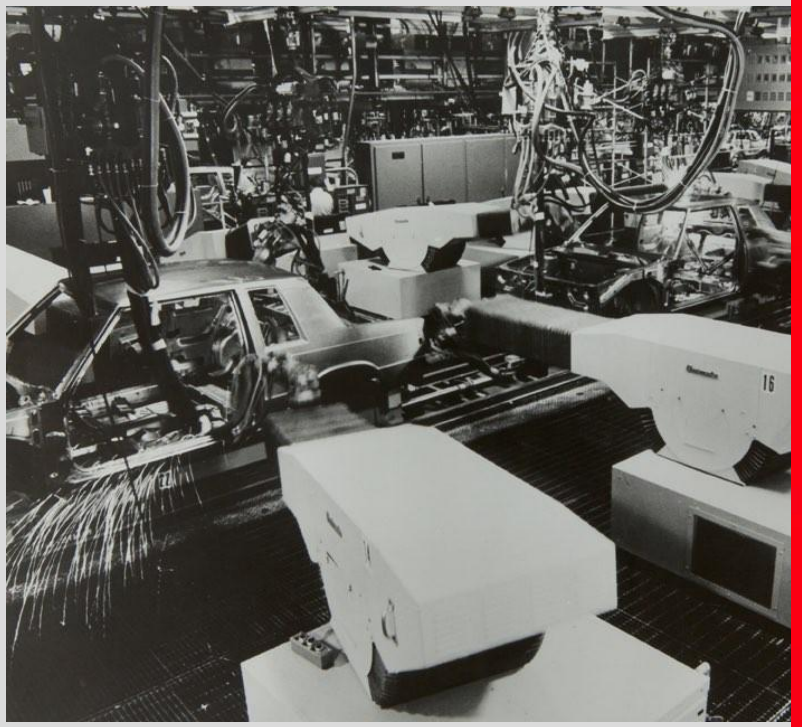
2 2 10 490

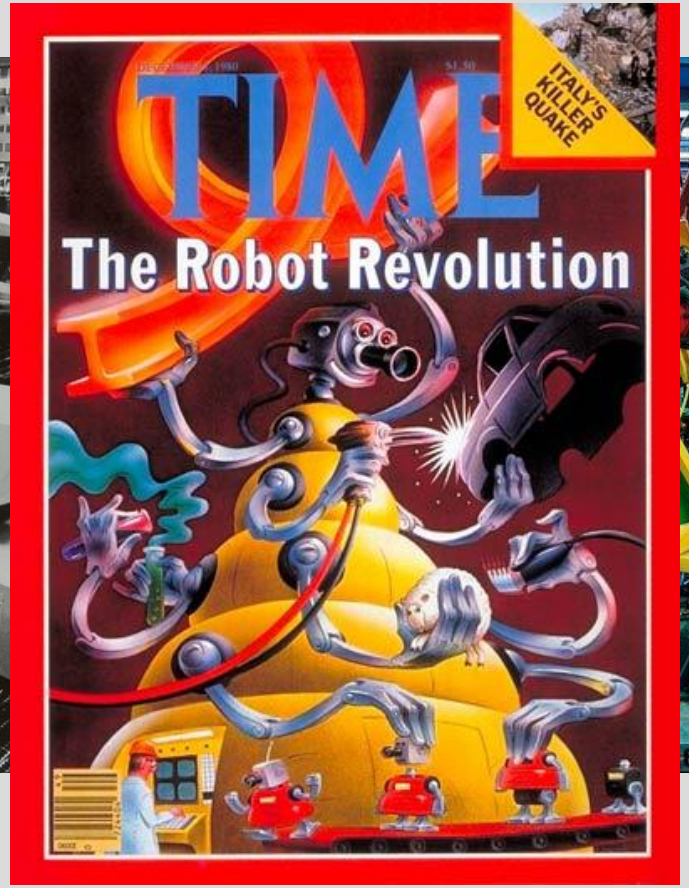
What we will be actually doing

1. The Moravec Paradox
2. “frontier” in current robotics
3. 2027+ “frontier” robotics
4. How can ((You)) be a part of it?
5. Case studies from mimic’s “ex-intern” robotics team

Part 1: The Moravec Paradox

The first gold rush of robotics







The Moravec Paradox I.



"it is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception and mobility"

Hans Moravec, 1988

"for computers, the hard things are easy and the easy things are hard"

TLDR, 2026

This is him now, feel old yet?







The Moravec Paradox II.

Algorithmic Moravec

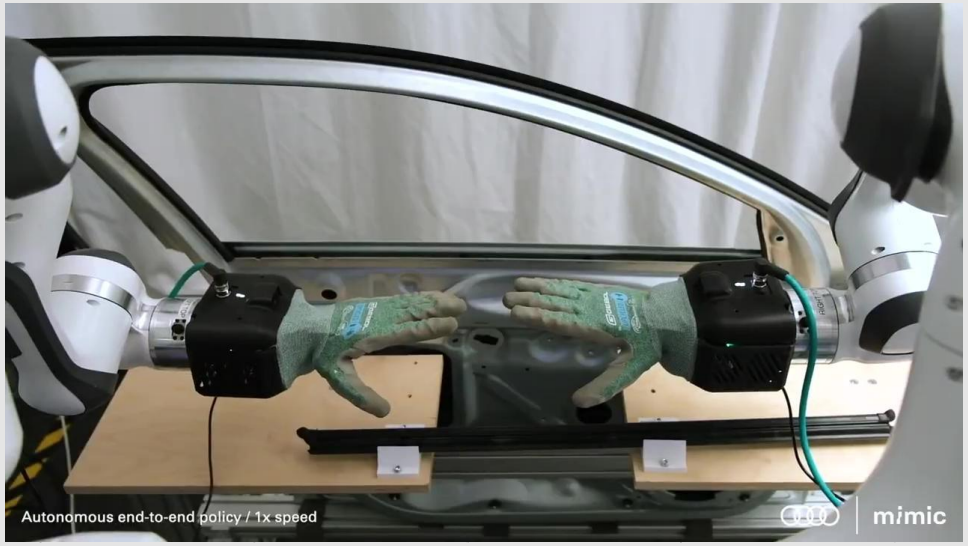
there is something fundamentally hard in perception/mobility/manipulation that prohibits using the same algorithmic approaches as in other domains

Practical Moravec

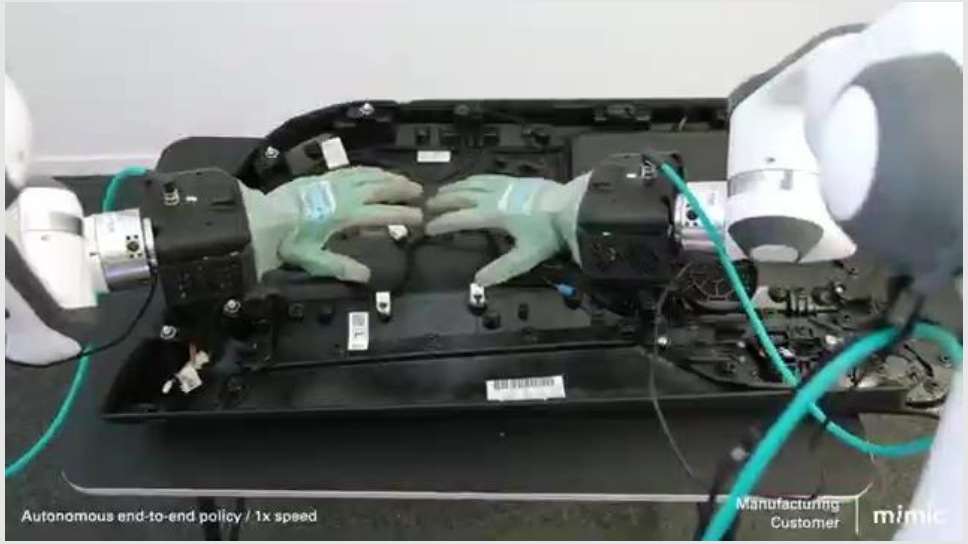
skill issue:^)

Part 2:
The frontier today

Dexterous manipulation on the shop floor



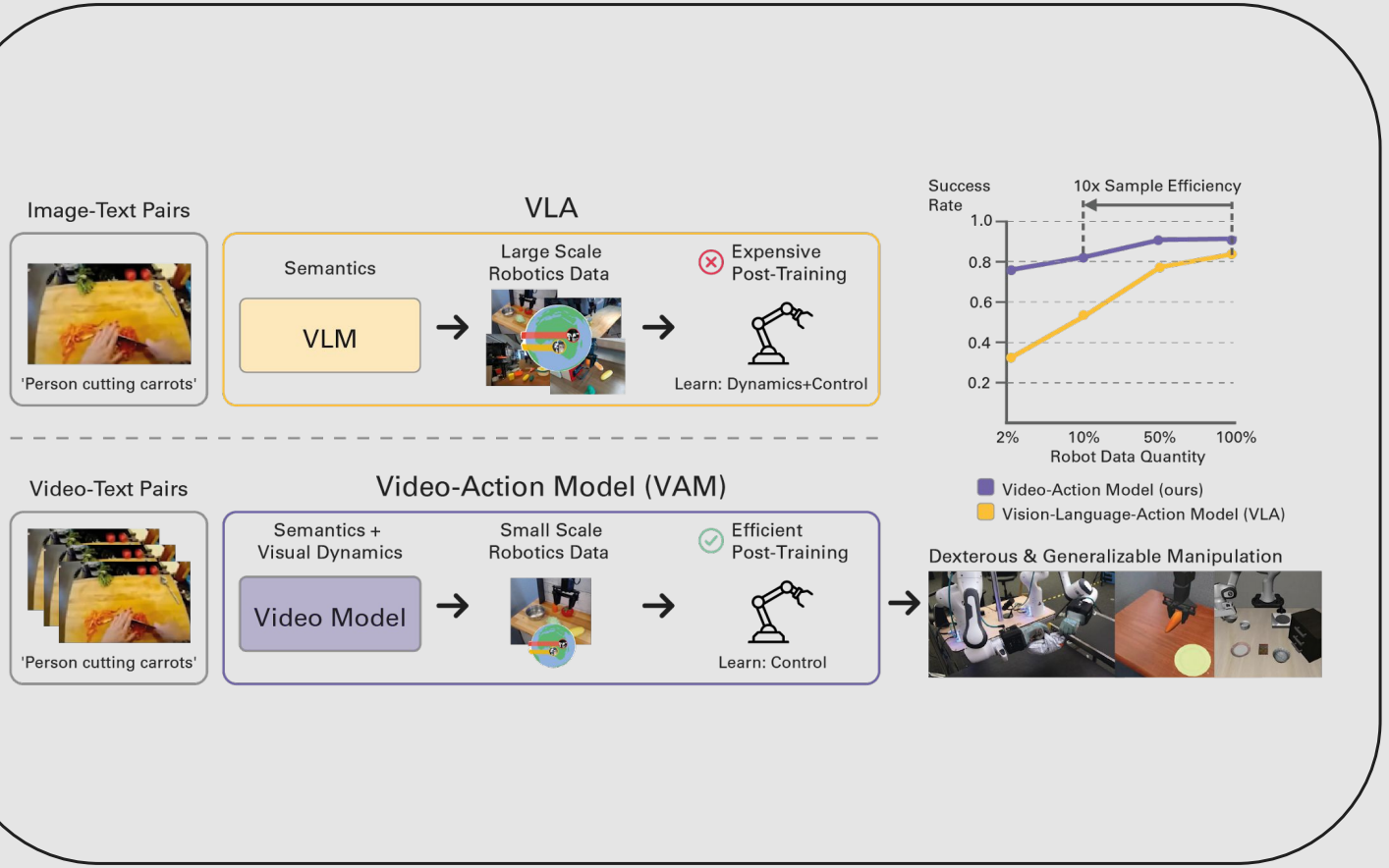




Dexterous manipulation anywhere



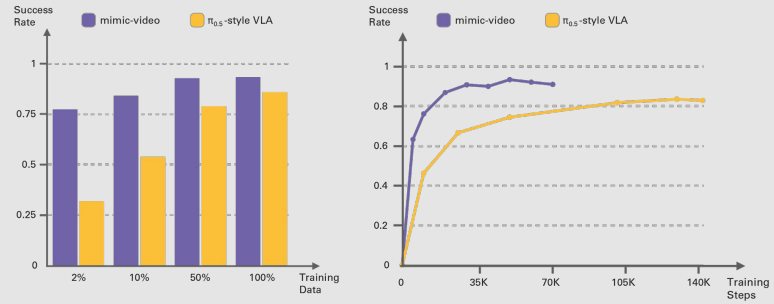
Video Action Models - mimic video



10× sample efficiency

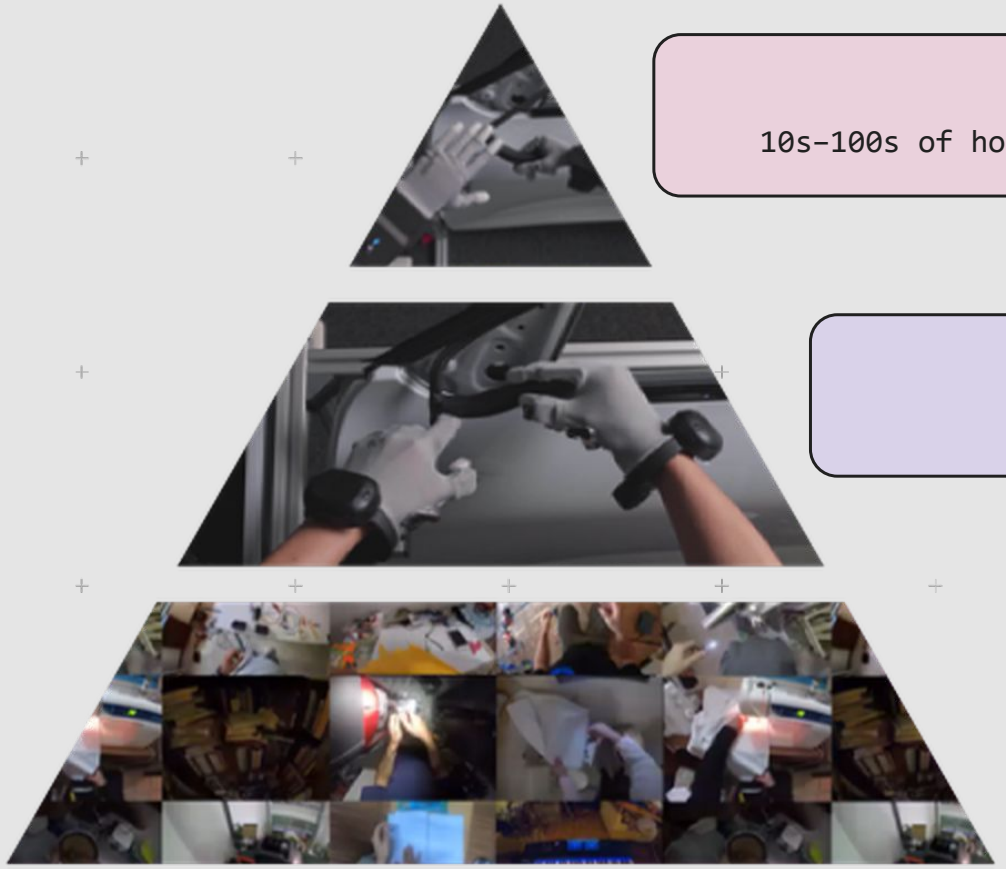
2× faster convergence

77% on LIBERO from 1 demo per task



mimic-video.github.io

mimic’s data pyramid

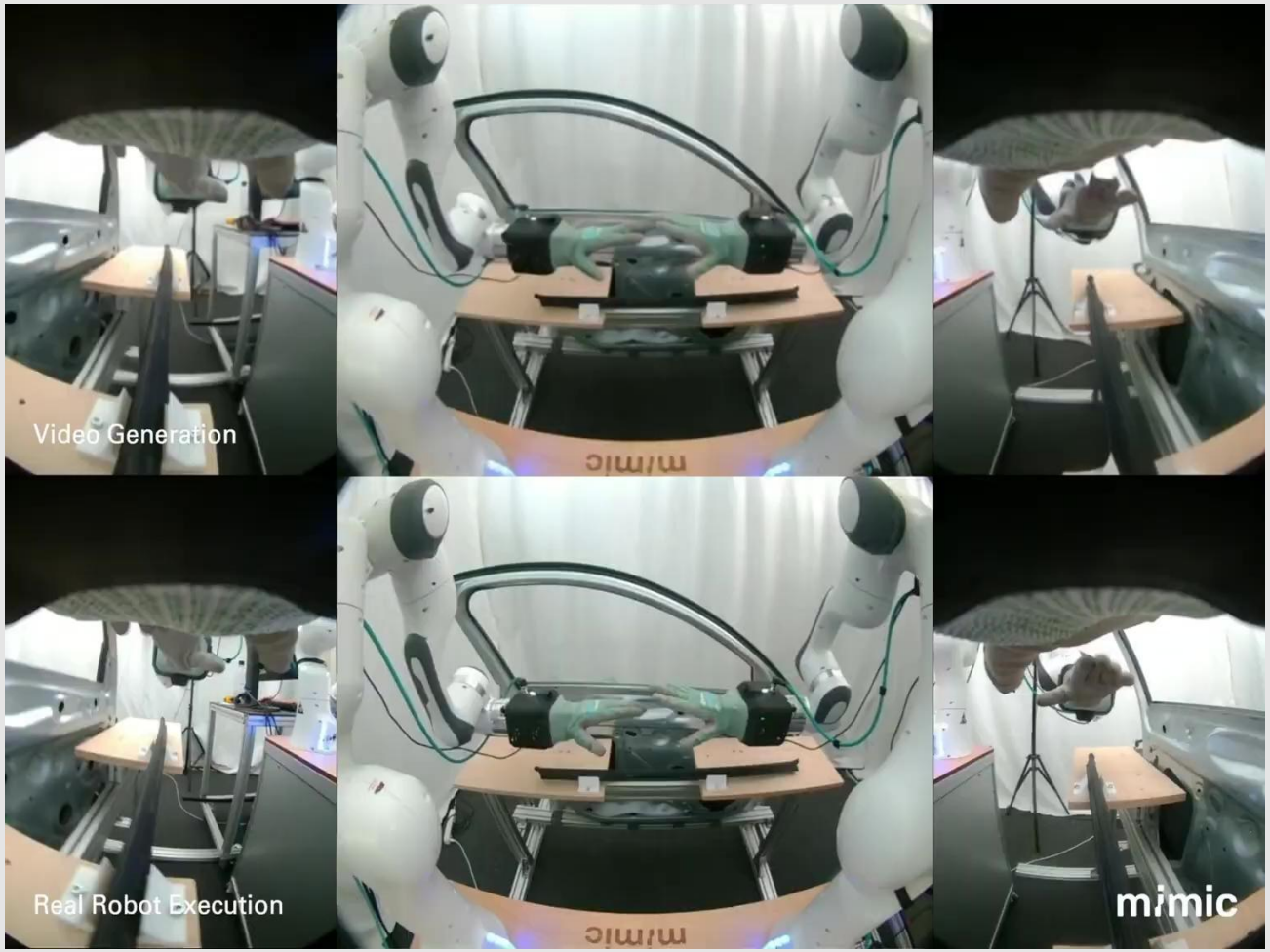


Robot data
10s–100s of hours · teleop + deployment · task fine-tuning

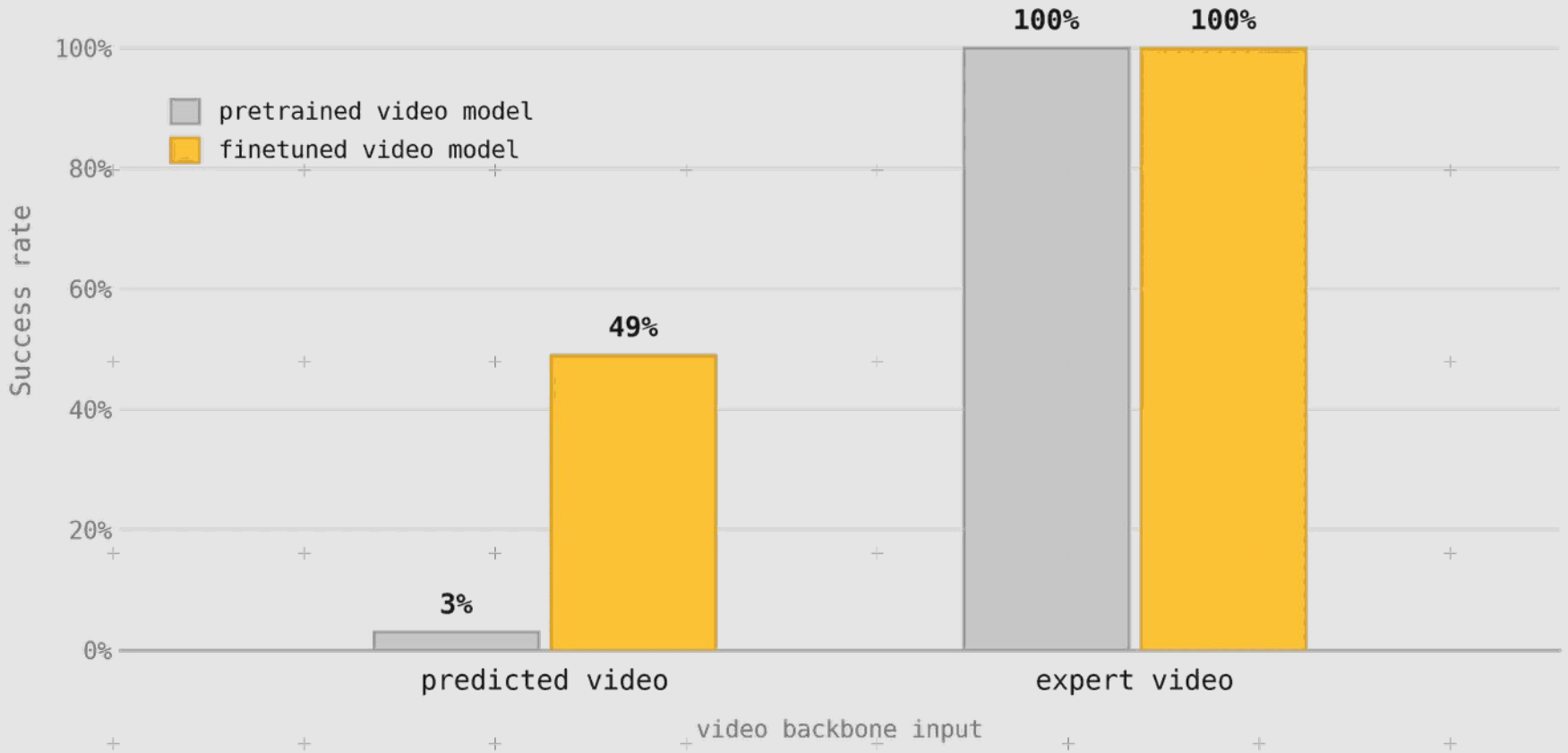
Wearable data
10k–100k hours · U1 + camera-only · mid-training

Human video
> 6M hours · freeform RGB · video pre-training

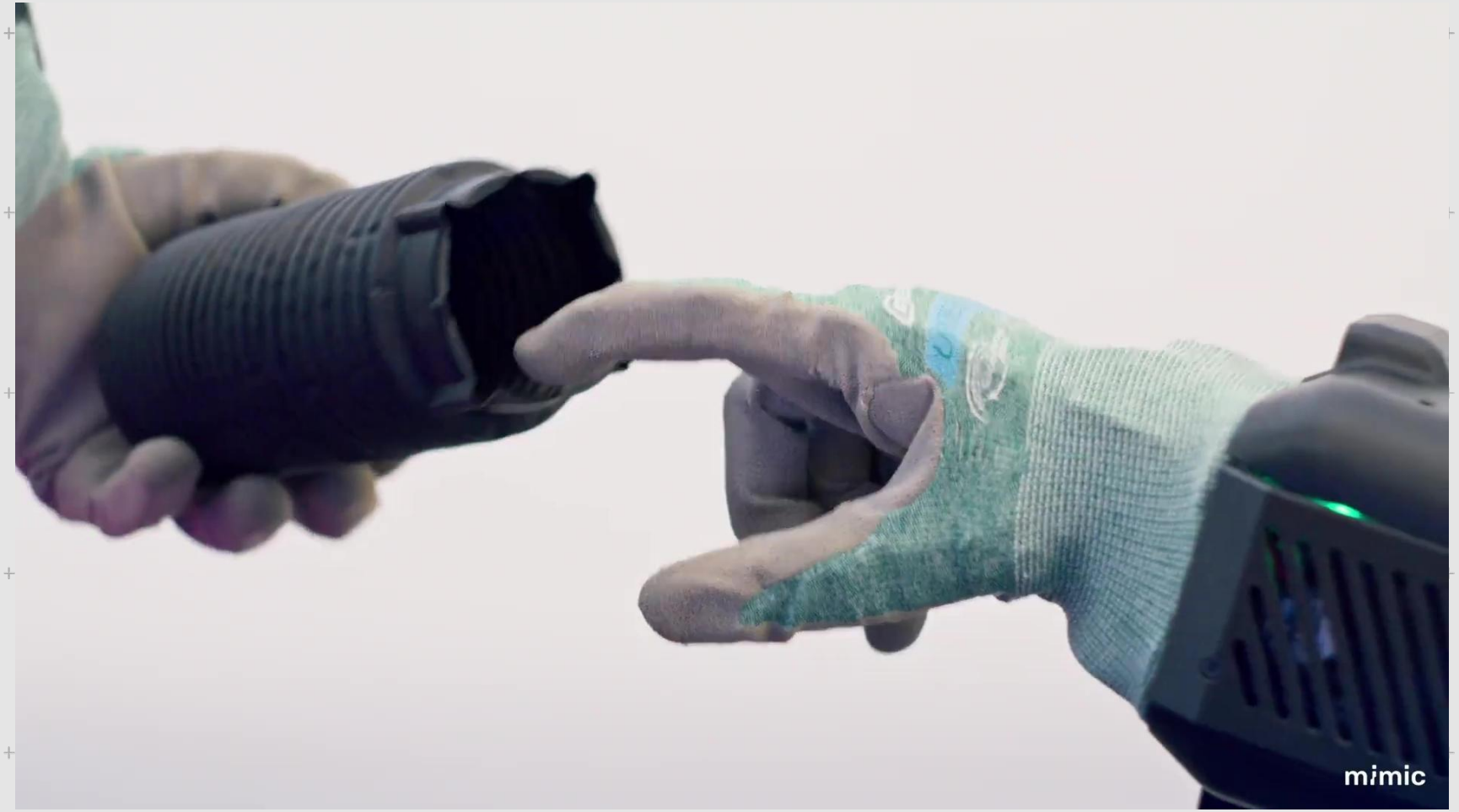
Control reduces to video prediction



Control reduces to video prediction

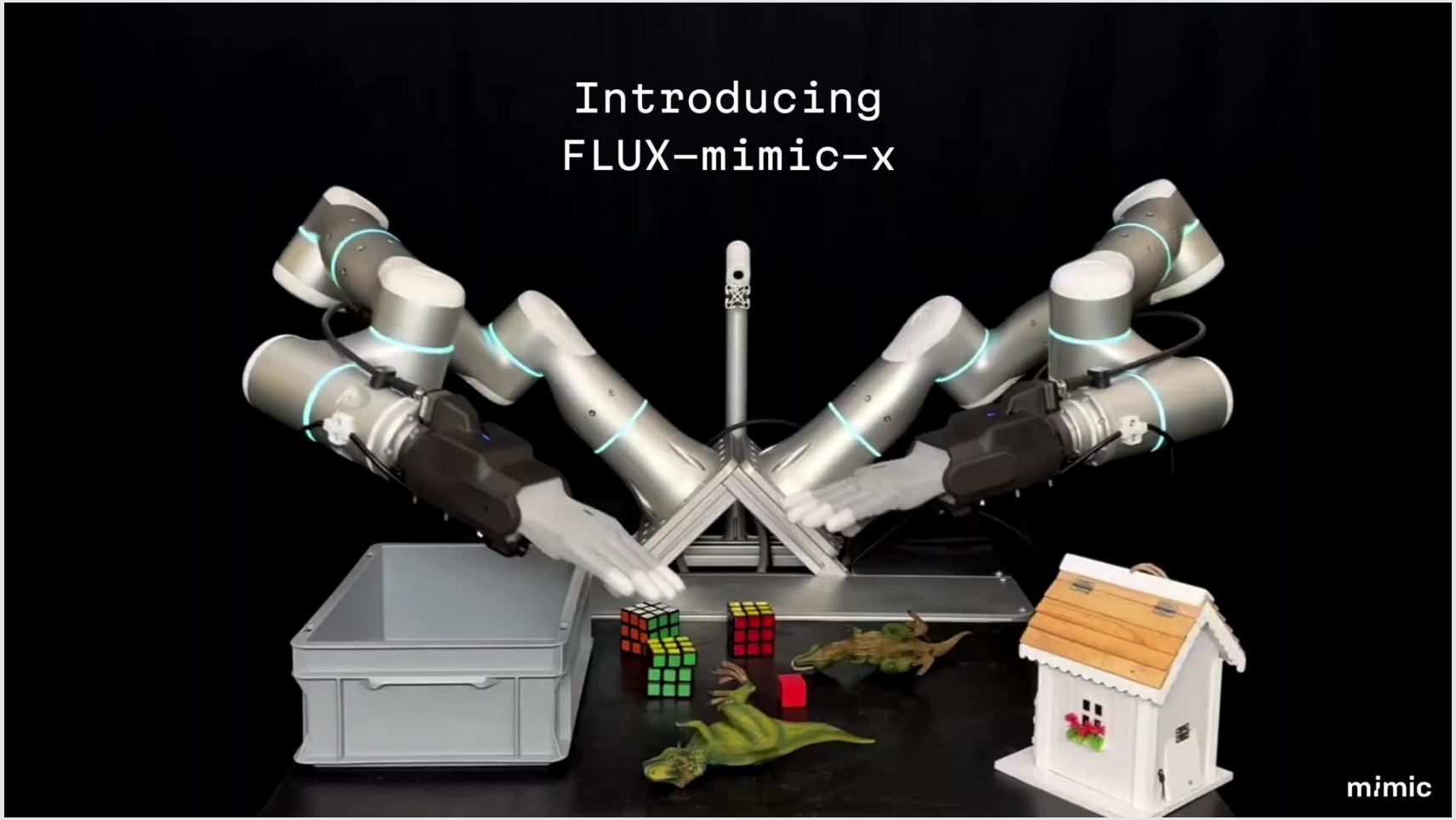


A no-nonsense partnership



mimic-video.github.io

#1 in benchmarks too, not just on the shop floor



Flux mimic - the core thesis remains



Robot data
10s–100s of hours · teleop + deployment · task fine-tuning

Wearable data
10k–100k hours · U1 + camera-only · mid-training

Human video
> 6M hours · freeform RGB · video pre-training

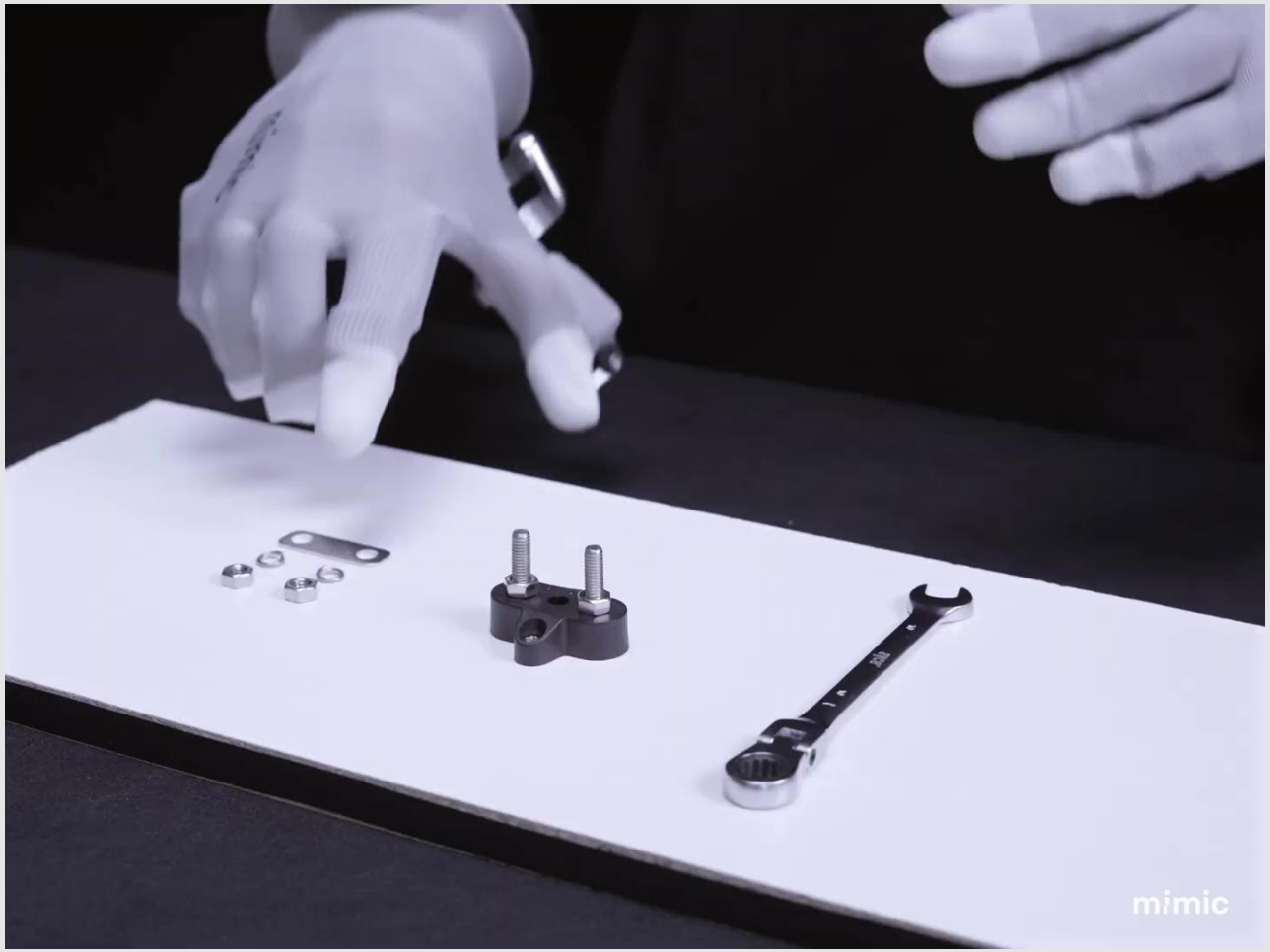
Pre-pretraining · FLUX
web-scale image + video generation

Custom hardware - mimic hand M1



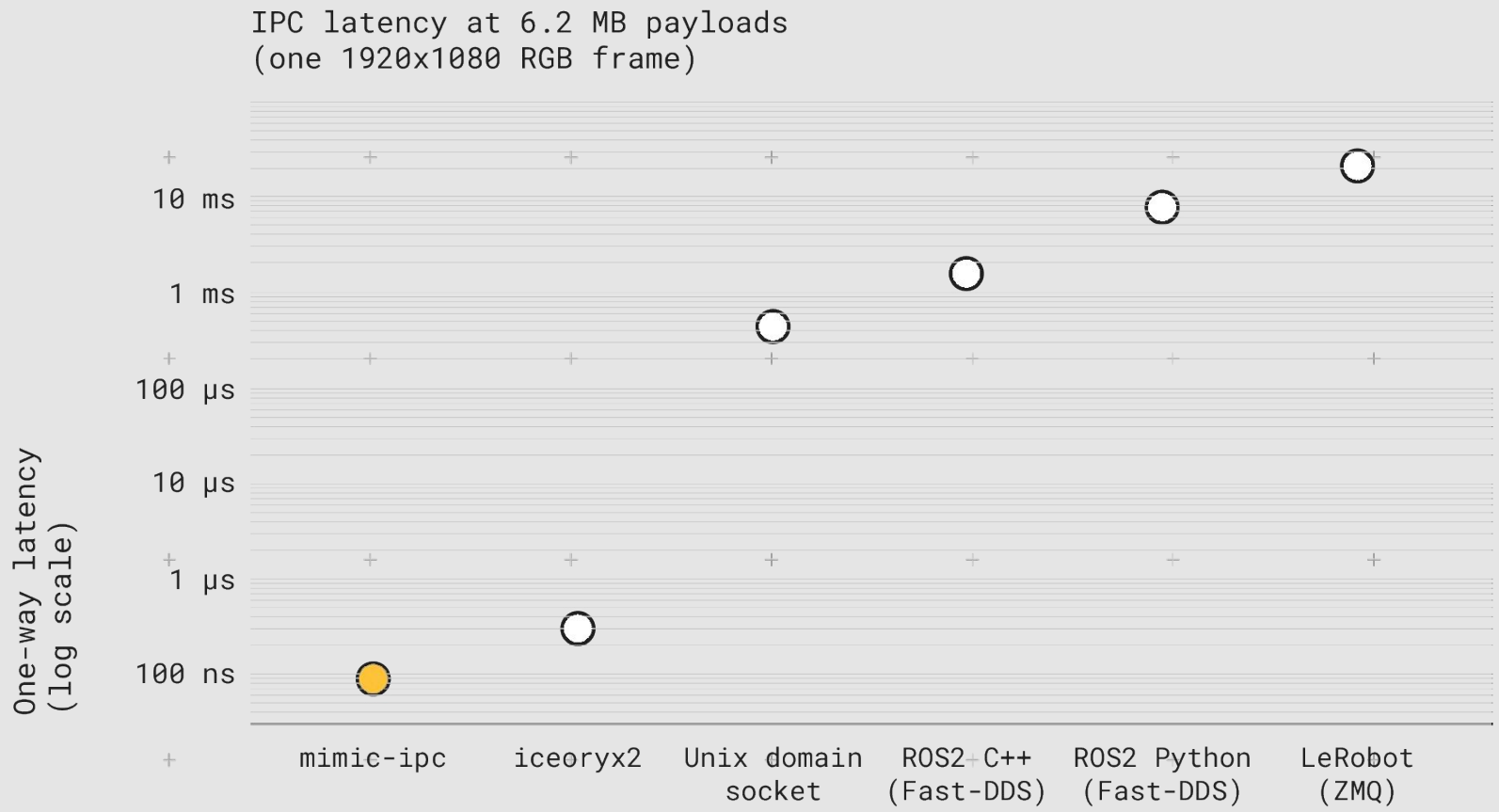
mimicrobotics.com, “Solving dexterity: a full-stack approach”

Custom hardware - mimic wearable U1



mimicrobotics.com, “Solving dexterity: a full-stack approach”

Custom middleware



89 ns median · 6.2 MB frame

~18,000× faster than FastDDS

350× less jitter

mimicrobotics.com full-stack blog post

Part 3:
Project 2027:
Dominate the shop floor

The Moravec Paradox II.

Algorithmic Moravec

there is something fundamentally hard in perception/mobility/manipulation that prohibits using the same algorithmic approaches as in other domains

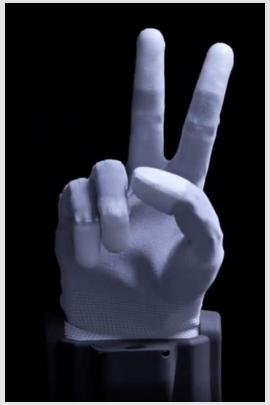
Practical Moravec

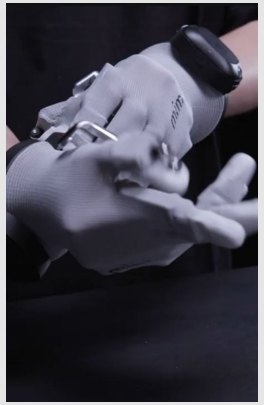
skill issue:^)

Solving practical Moravec

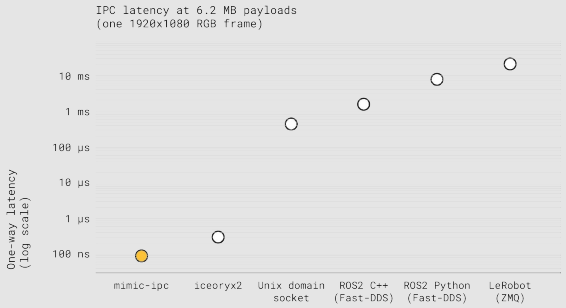
Integration at Customer

Hardware and Firmware

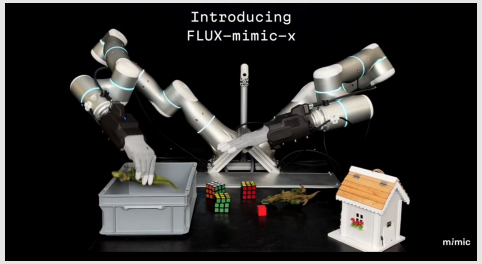


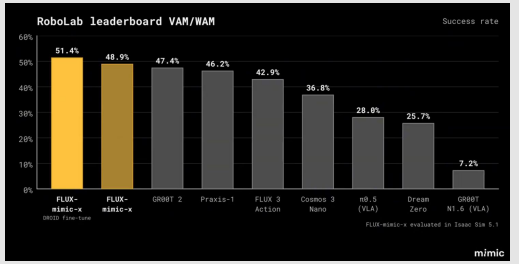


Systems and Middleware



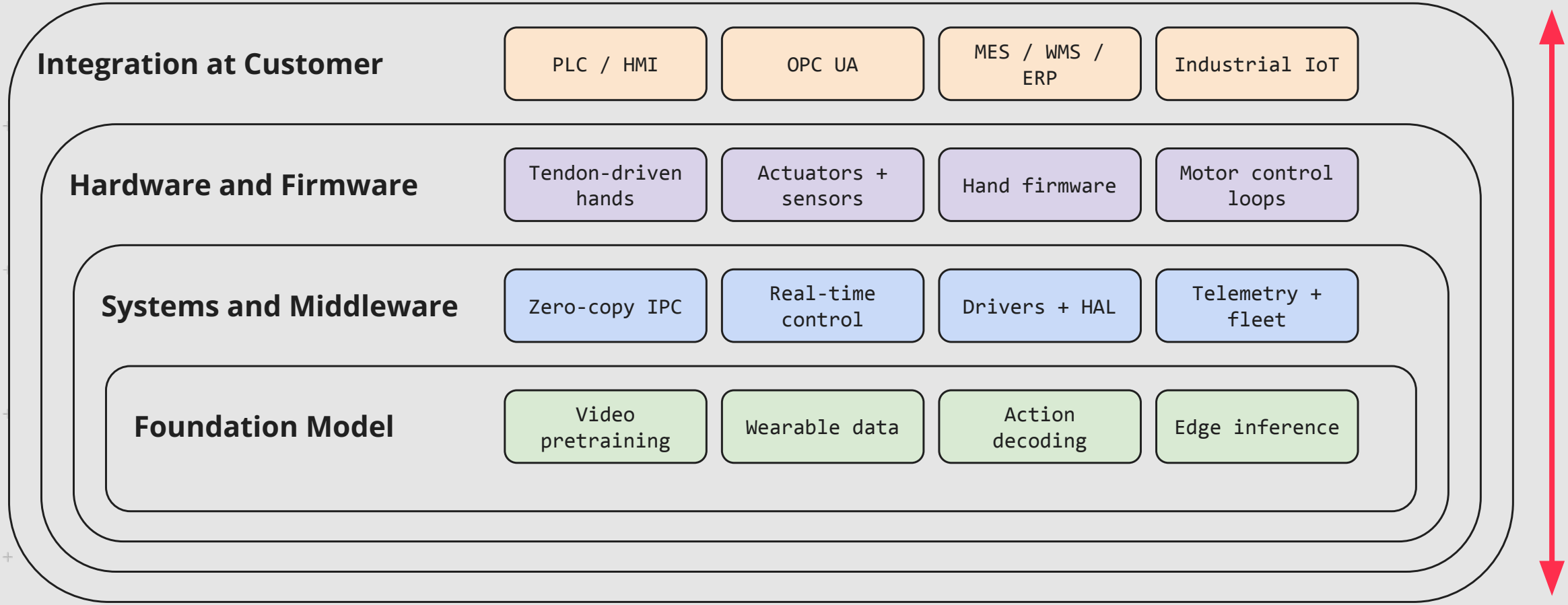
Foundation Model





Solving practical Moravec - A Detailed Wishlist

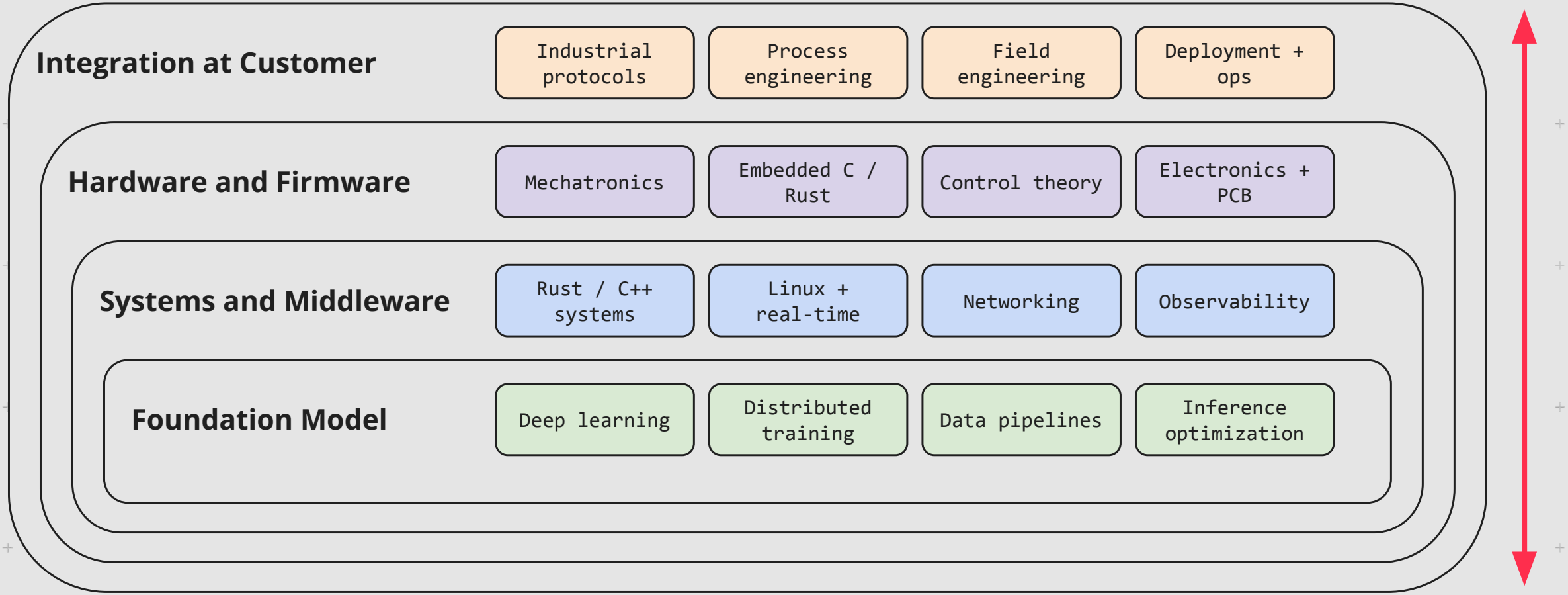
Fullstack excellence & “GOFE”



Part 4:
How can ((You)) take part

Solving practical Moravec - Your Stack

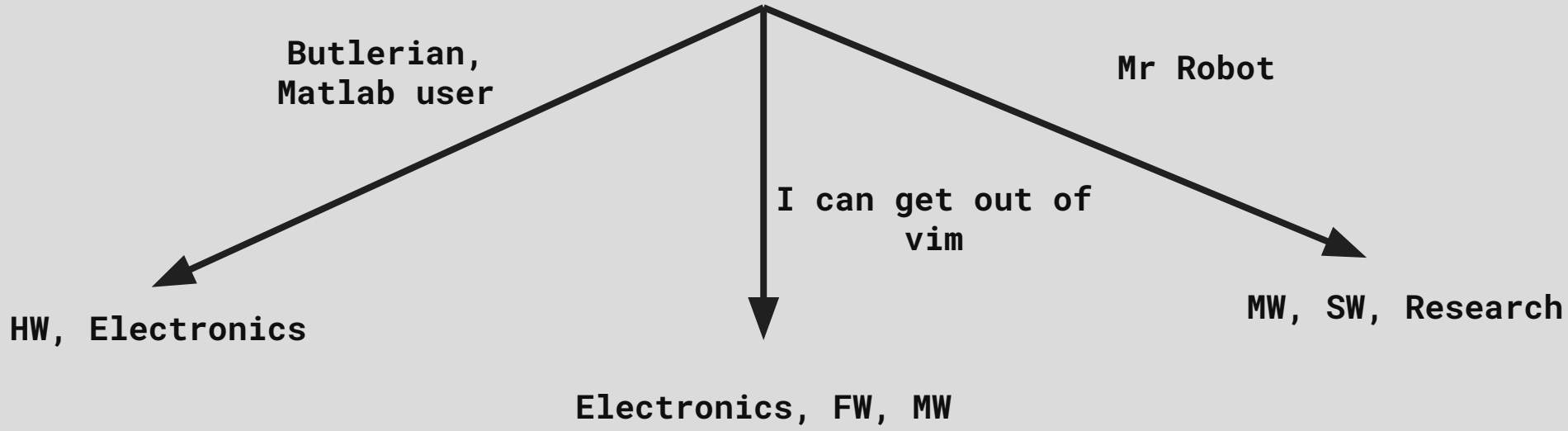
Fullstack excellence & “GOFE”



Biggest change: the “pipeline of the SWE cospayer” is broken

ME -> Robotics -> SWE is a lot harder!

1st question: How much do you hate computers (already)?



Mr Robot it is, what is out there?

“Researcher”

Research “Engineering”

Forward “Deployed” Engineering

“Controls” / Robotics Infra

Systems Engineering

Cloud / ML infrastructure

Data / Deployment / (R)SRE “Field”

“Researcher”

1. Very specific and dependent on industry + high risk
2. *has published in premier places in relevant topic*
3. Premier: CoRL, RSS, Big3 (ICRA/IROS/IEEEslop)
4. Actually reads papers (generative modelling, VLA/VLM…)
5. “Has a taste for training large models”
6. Is not foreign to computers
7. Is not foreign to robots

Research “Engineer”

1. Takes lower risk, offsets with wider skillset
2. helps: *has published in premier places in relevant topic*
3. Watches videos of papers (generative modelling, VLA/VLM…)
4. Torch/JAX nerd, knows what cloud is
5. Big on linux, ~SW (Python3), can reason about algo
6. Is not foreign to robots

Research “Engineer”

1. Takes lower risk, offsets with wider skillset
2. helps: *has published in premier places in relevant topic*
3. Watches videos of papers (generative modelling, VLA/VLM…)
4. Torch/JAX nerd, knows what cloud is
5. Big on linux, ~SW (Python3), can reason about algo
6. Is not foreign to robots

Forward “Deployed” Engineer

1. Want to train models but not sure if research is for you?
2. Wants to talk to people, even customers (disgusting)
3. Wants to talk to other people’s (...) codebase (even worse)
4. Mix between AI research eng and what is to follow

Systems Engineering

1. Hardcore algo nerd; “DSA interviews are a joke”
2. Understands what a computer actually does. Really.
3. Good enough so language doesn’t matter. Knows C++ (Rust) and Python anyway
4. Has seen good middleware: wrote it
5. Goat: also knows embedded or cloud
6. Has slept next to a robot
7. “I don’t go to confs no technical people are there”

Cloud / ML infrastructure

1. Is not afraid to fry away the GDP of a small country in few weeks
2. Distributed training, cloud infra/mgmt
3. CUDA kernel work does not scare him/her, he/she scares the kernel
4. Python, can do a DSA interview
5. Can design and maintain architecture
6. Webstack doesn‘t hurt (will end up doing it in small companies)

Data / Deployment / RSRE “Field”

1. Has demod and deployed and enjoyed it
2. “Shop floor cred”
3. Knows what a computer is
4. Can debug while keeping a customer entertained
5. Goat: is also a fullstack dev “SRE”

The Moravec Paradox II.

Algorithmic Moravec

Practical Moravec

The Intern Paradox (Q&A!)

Chief Intern Officer (CIO)

- OpenArm, really?
- Random side quest
- Drivers + HAL
- MIT drop-out
- Homeless

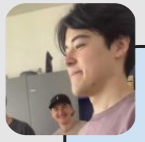




The Sim Guy

- Thesis
- Fixed-term
- Full-time
- Sim, sim, sim
- and much more





Zero-copy IPC

- Fixing bugs…
- Fed up with ROS2
- Zero-copy IPC
- From scratch
- Fully in Rust…