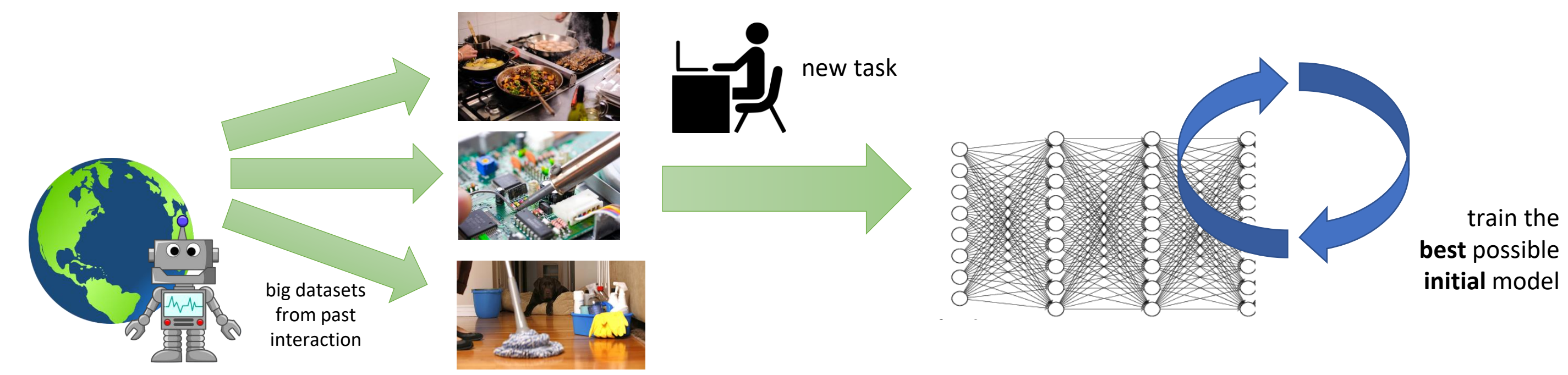
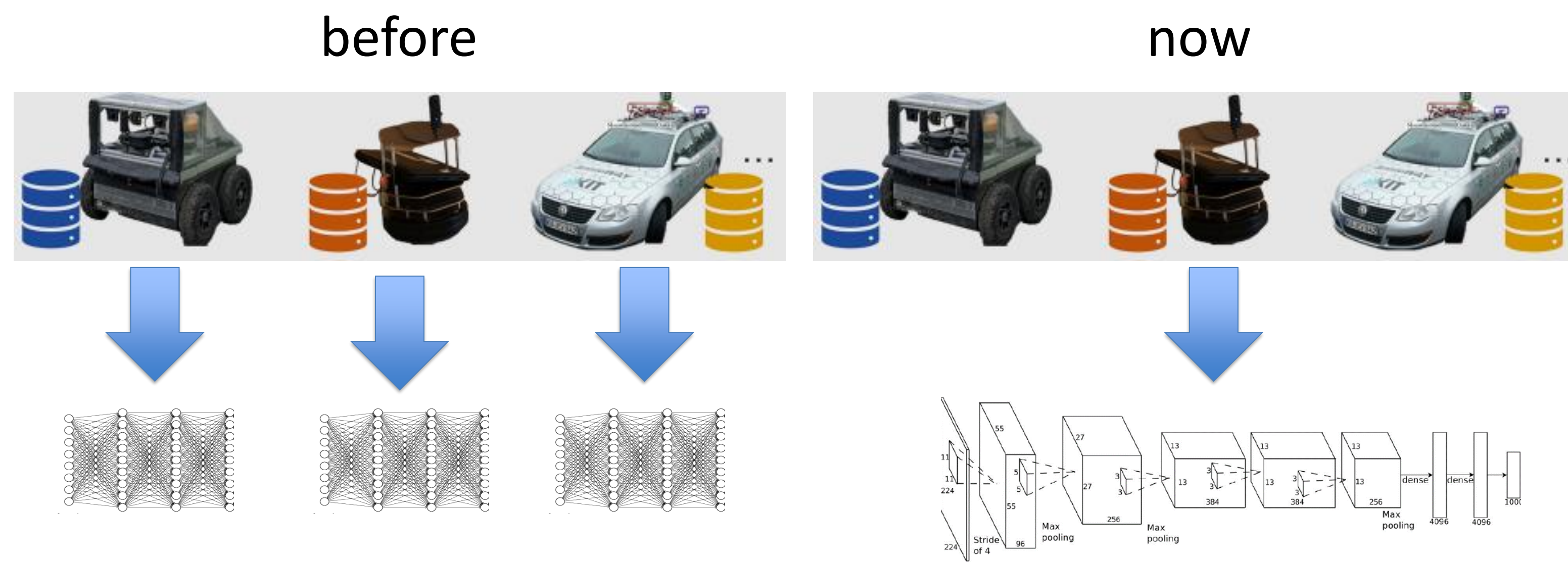


NSF FRR: Robotic Learning with Reusable Datasets

Sergey Levine, UC Berkeley

Key goal: enable data reuse in robotic learning

- **T1:** Develop algorithms that can reuse data
- **T2:** Collect **datasets** that can be reused



Bridge Data & Pretraining for Robots

- 33,000+ demonstrations
- 20+ environments
- 100+ tasks
- Designed to be reusable by other researchers in **new domains** and for **new tasks**

1. Pre-train on bridge data. Fine-Tune on Mix of Bridge Data and Target Data

Frederik Ebert, Yanlai Yang, Karl Schmeckpeper, Bernadette Bucher, Georgios Georgakis, Kostas Daniilidis, Chelsea Finn, Sergey Levine. **Bridge Data: Boosting Generalization of Robotic Skills with Cross-Domain Datasets**. RSS 2022.
Aviral Kumar, Frederik Ebert, Yanlai Yang, Anikait Singh, Chelsea Finn, Sergey Levine. **Pre-Training for Robots: Offline RL on Diverse Data Supports Flexible and Efficient Fine-Tuning**. 2022.

Finetuning via Planning & Exploration

- Can we learn **general purpose** prior knowledge from the offline data?
- Can we leverage this knowledge to **generalize in zero shot**?
- If we fail to generalize, can we use this knowledge to **scaffold efficient finetuning**?

Model-Free **0.0%** Success Rate
FLAP (Target Data Only) **25.0%** Success Rate
FLAP (Broad Data) **75.0%** Success Rate

Pooling Data from Multiple Robots

Can we create a dataset and model that can generalize in **zero shot** to control entirely new robots?

Shah*, Sridhar*, Bhorkar, Hirose, Levine. **GNN: A General Navigation Model to Drive Any Robot**. 2022.