We build household robot manipulators that learn proficiently and efficiently like humans via perceptual and motor abstractions.

**Build Object-Centric Perception - VIOLA**
Robots that know object concepts in RGB images can make you a coffee!

- Object-centric priors for images facilitate better visuomotor policy learning
- Pretrained vision models capture statistical priors of objects on images across various visual variations
- VIOLA policies can accomplish long-horizon, contact-rich manipulation tasks

**Discover Motor Abstractions - BUDS**
No need to write motor programs for your robots any more!

- BUDS can automatically discover skills (motor abstractions) from a small amount of unannotated prior experiences
- BUDS identifies recurring segments as skills based on multi-sensory coherence
- Semantically-meaningful skills emerge from the unsupervised discovery

**Hierarchical Planning**
Robots can solve tasks that you’ve never taught them to do!

- HSGs leverage complementary strengths of object-centric abstractions and skills
- HSGs contain disentangled concepts for abstract semantic reasoning
- HSGs contain object locations for precise spatial reasoning
- HSGs allow compositional reasoning to generalize to new tasks with unseen goals

**What comes next?**
- We want a robot to continually improve over its lifespan, learning to solve unseen tasks
- We build a robot manipulation benchmark to support future research in lifelong robot manipulation