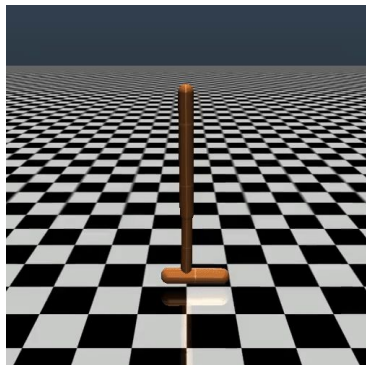
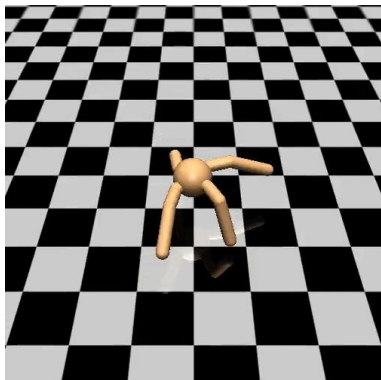


High Sample Complexity of RL

Hopper - v1

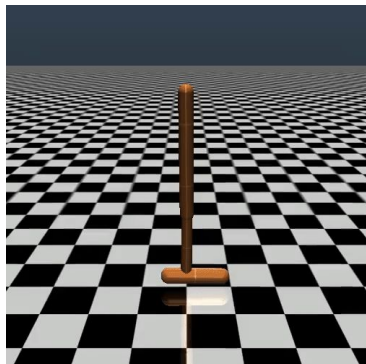


Ant - v1

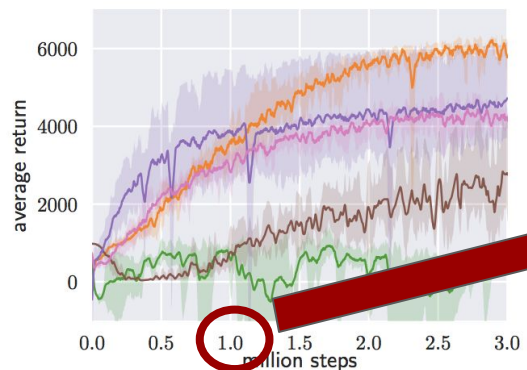
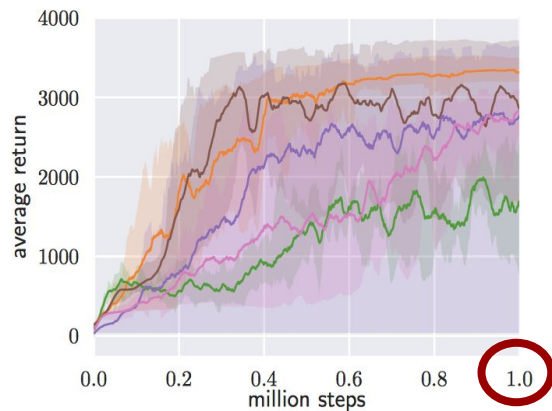
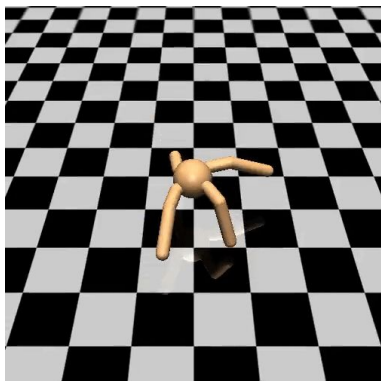


High Sample Complexity of RL

Hopper - v1



Ant - v1



1 million
timesteps

Meta-Learning



Collect Experience
(Train Tasks)



learn

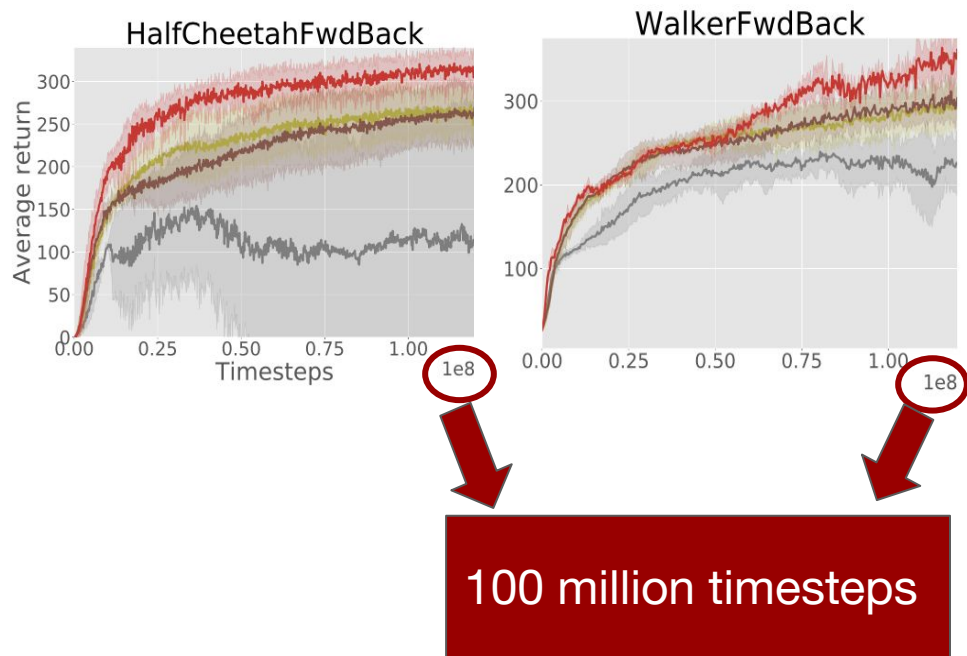


Fast Adaptation
(Test Tasks)

Challenges of Meta-training

Challenges of Meta-training

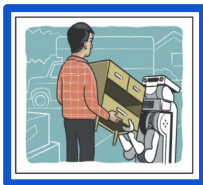
High Sample Complexity



Guided Meta-Policy Search

Need a policy that can **quickly** adapt to solve any task from the distribution of training tasks

Train Set Tasks



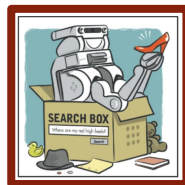
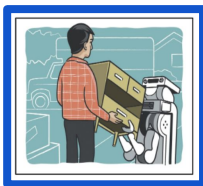
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Guided Meta-Policy Search

Need a policy that can **quickly** adapt to solve any task from the distribution of training tasks

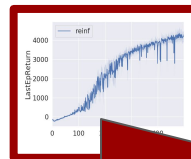
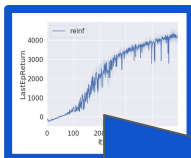
Train Set Tasks



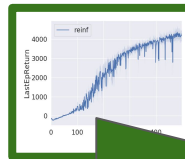
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Learn **Local** Policies



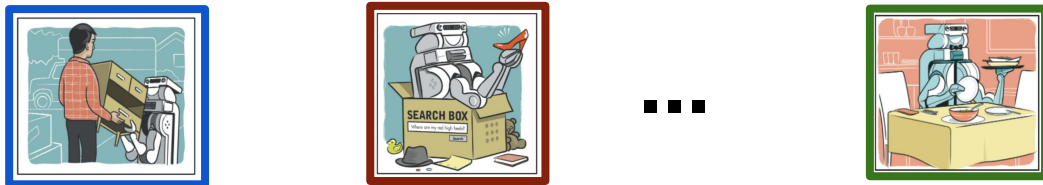
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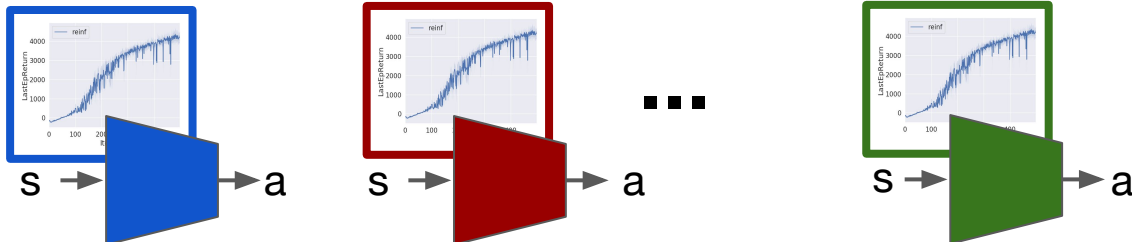
Guided Meta-Policy Search

Need a policy that can **quickly** adapt to solve any task from the distribution of training tasks

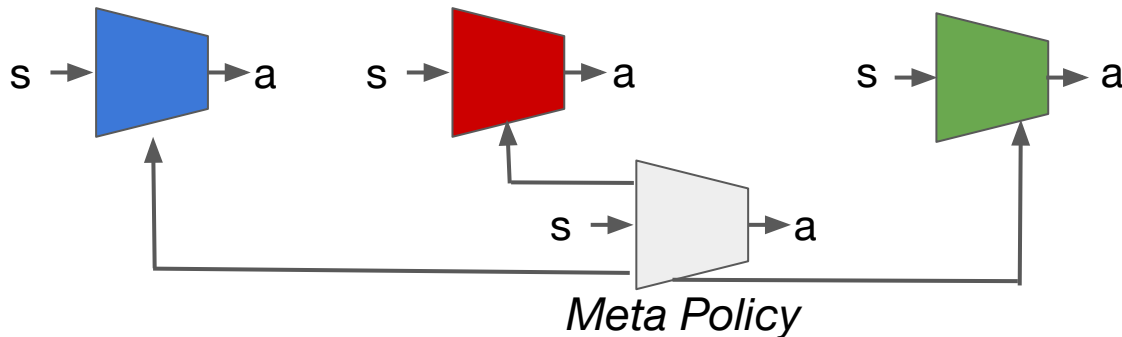
Train Set Tasks



Learn **Local** Policies

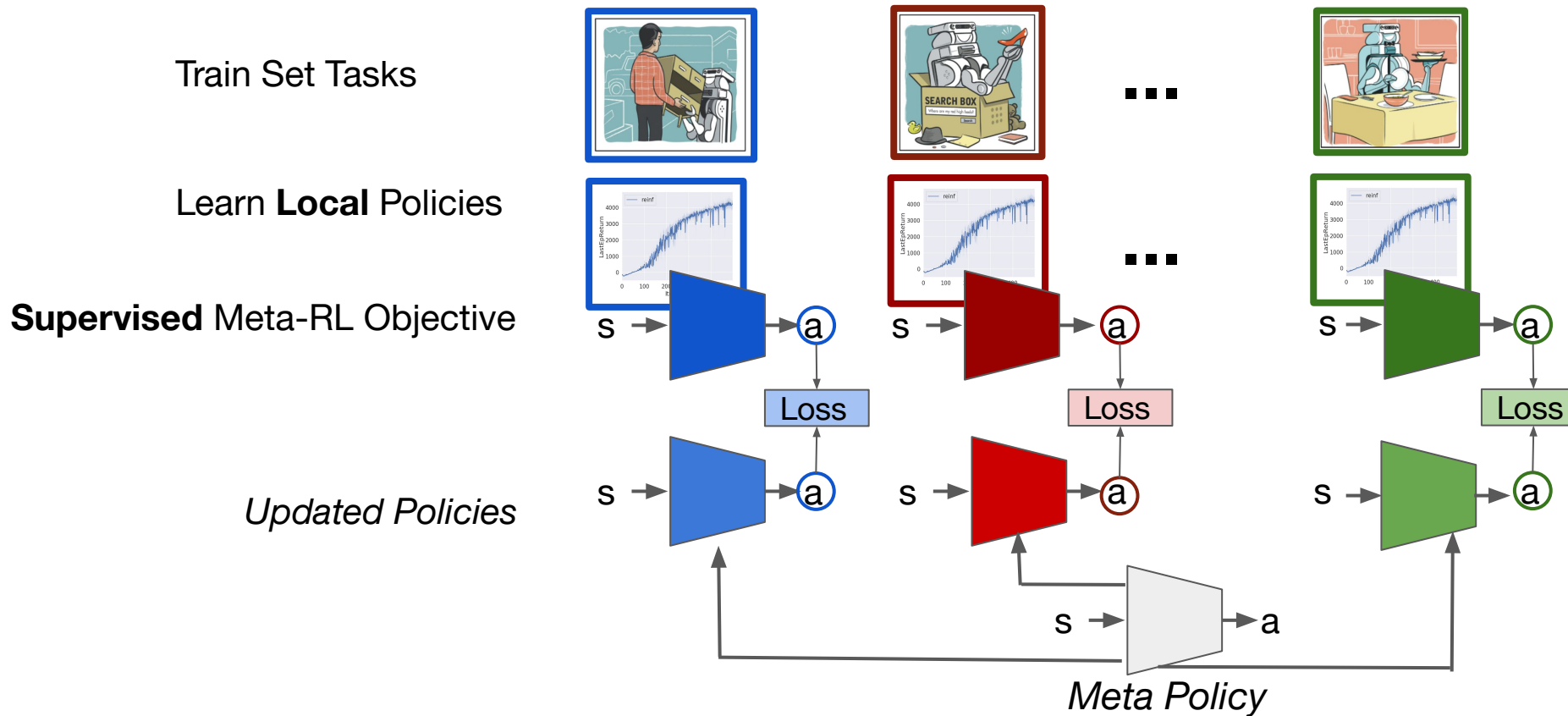


Updated Policies



Guided Meta-Policy Search

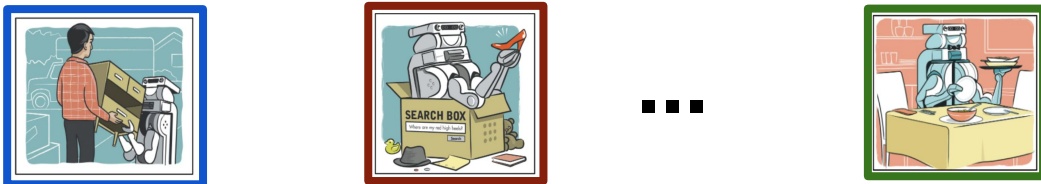
Need a policy that can **quickly** adapt to solve any task from the distribution of training tasks



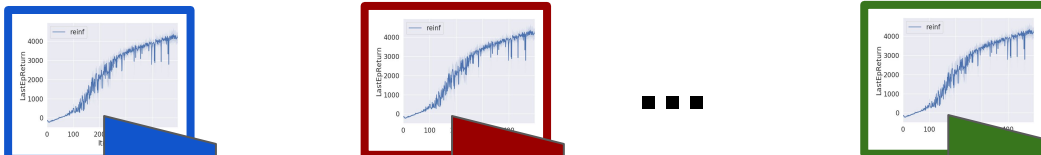
Guided Meta-Policy Search

Need a policy that can **quickly** adapt to solve any task from the distribution of training tasks

Train Set Tasks



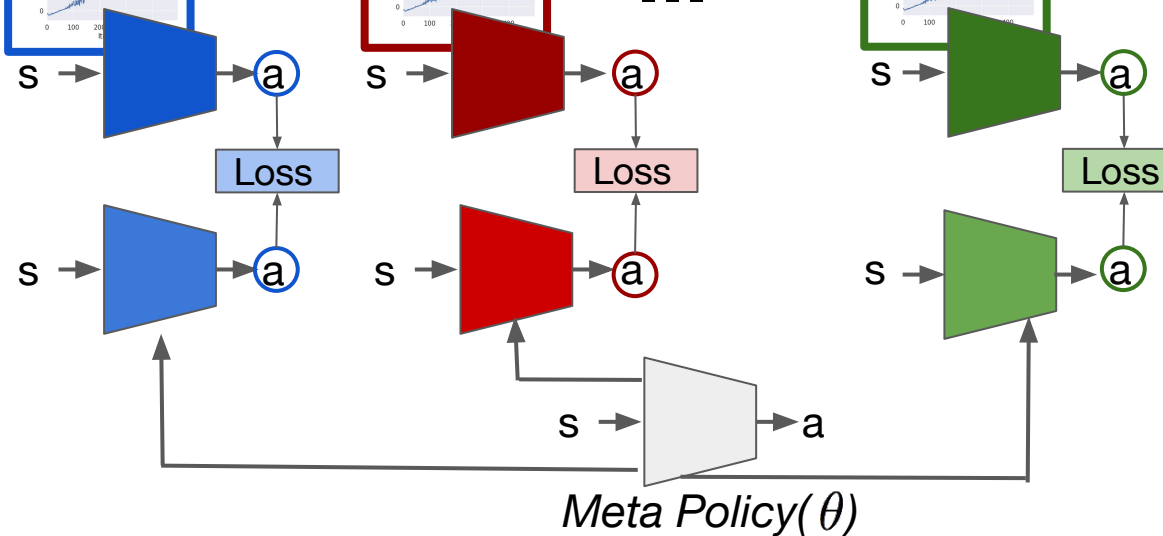
Learn **Local** Policies



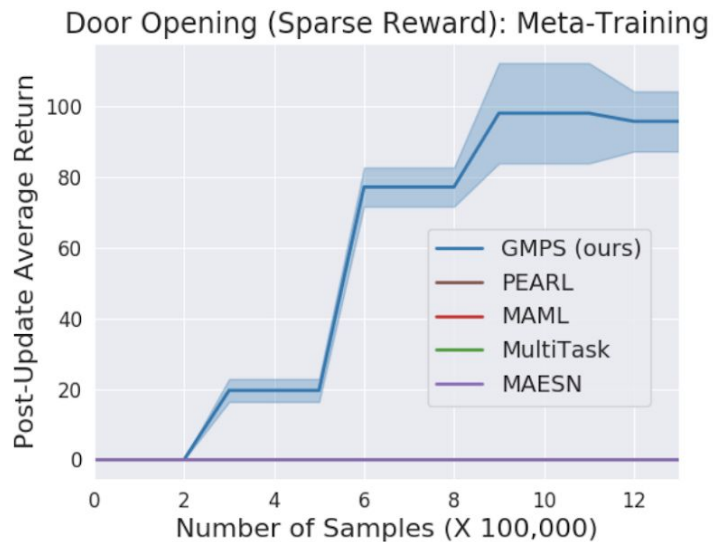
Supervised Meta-RL Objective

$$\max_{\theta} \sum_{\mathcal{T}_i} \sum_{(s_t, a_t) \in \mathcal{D}\mathcal{T}_i} \log \pi_{\phi}(a_t | s_t)$$

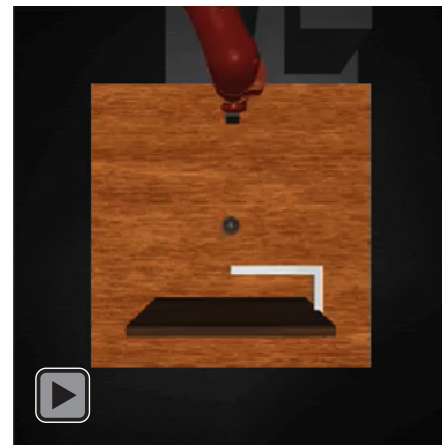
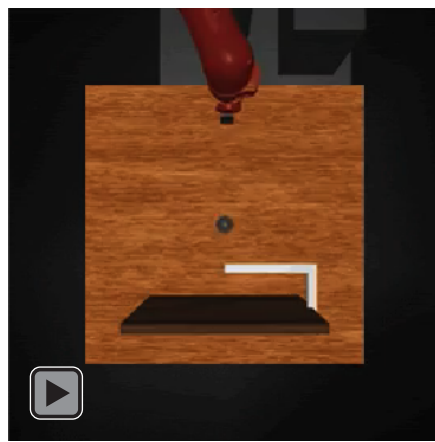
Updated Policies (ϕ)



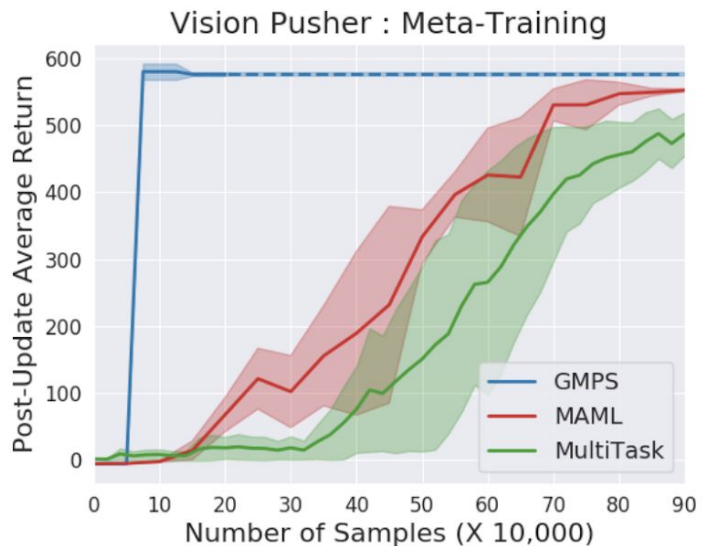
Meta-Learning from Demos : Sparse Reward



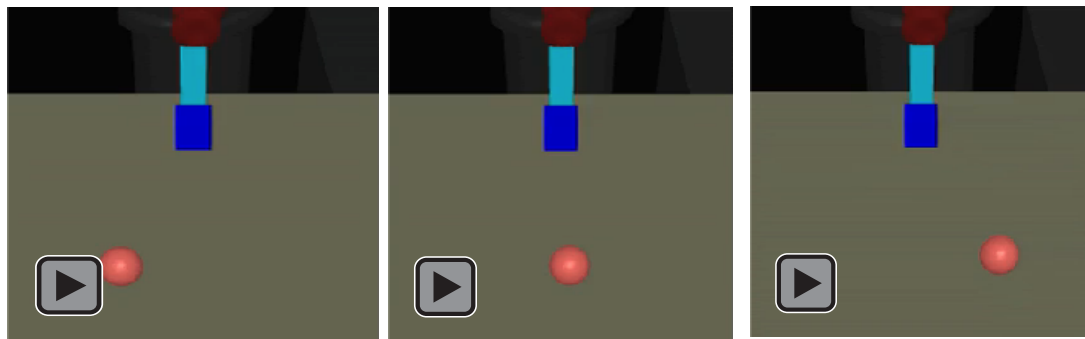
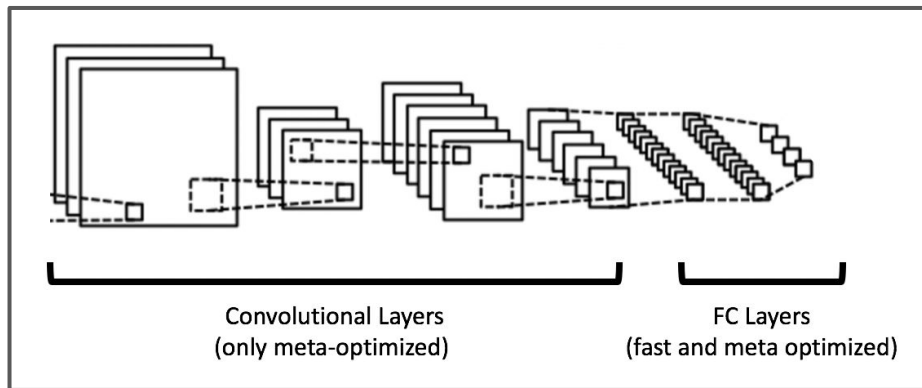
Door Opening



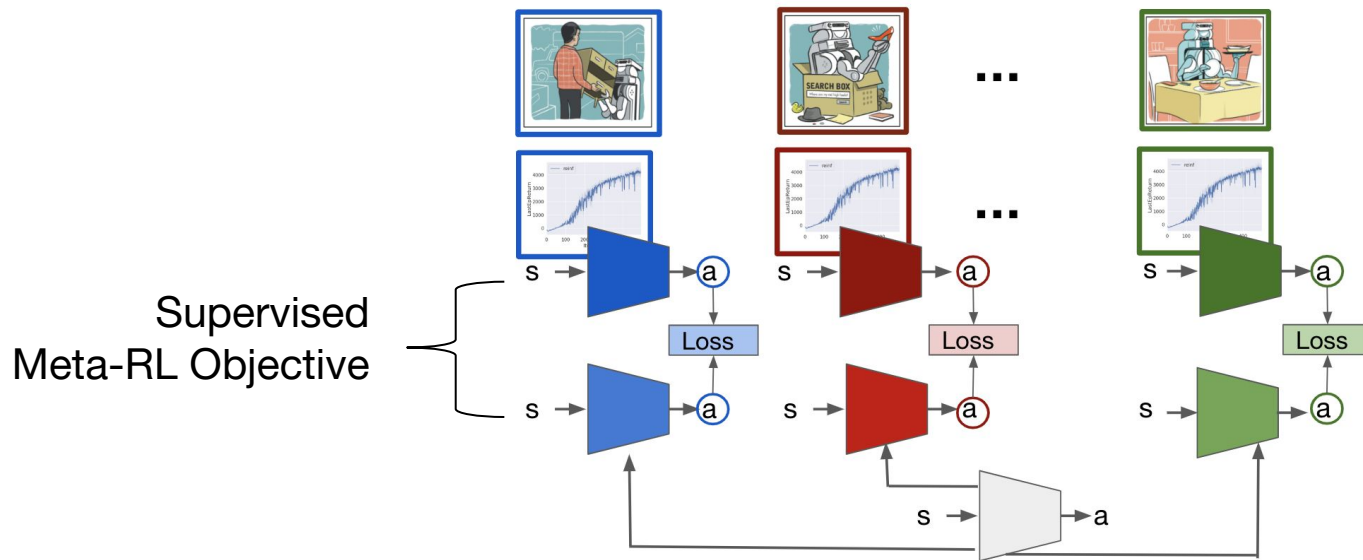
Meta-Learning from Demos : Visual Observations



Pushing



GMPS decouples meta-optimization



Please come visit our poster at **East Exhibition Hall B+C #42, 5:30 - 7:30 pm**

Github : [russellmendonca/GMPS](https://github.com/russellmendonca/GMPS)

Website : sites.google.com/berkeley.edu/guided-metapolicy-search

Contact : russellm@berkeley.edu

Thank You !

Abhishek Gupta



Rosen Kralev



Pieter Abbeel



Sergey Levine



Chelsea Finn



Please come visit our poster at **East Exhibition Hall B+C #42**

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