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Robot Learning

2

3



Sampling strategy impacts planning speed

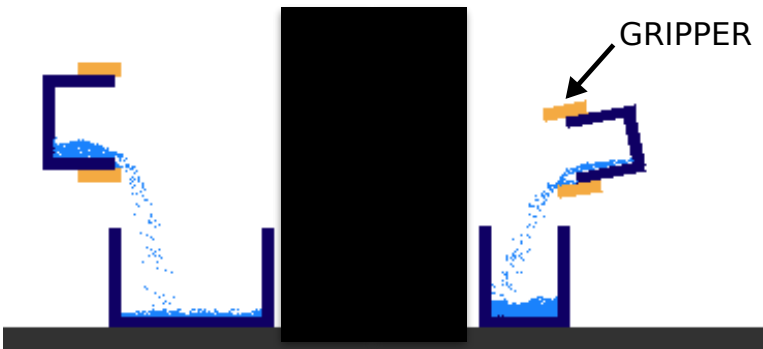
How to decide the order of samples?

Intuition:

- If previous samples failed to generate a plan, similar samples may also fail.
- Samples different to the failed ones may succeed.

Sanning g'rasp

Sampiringporour

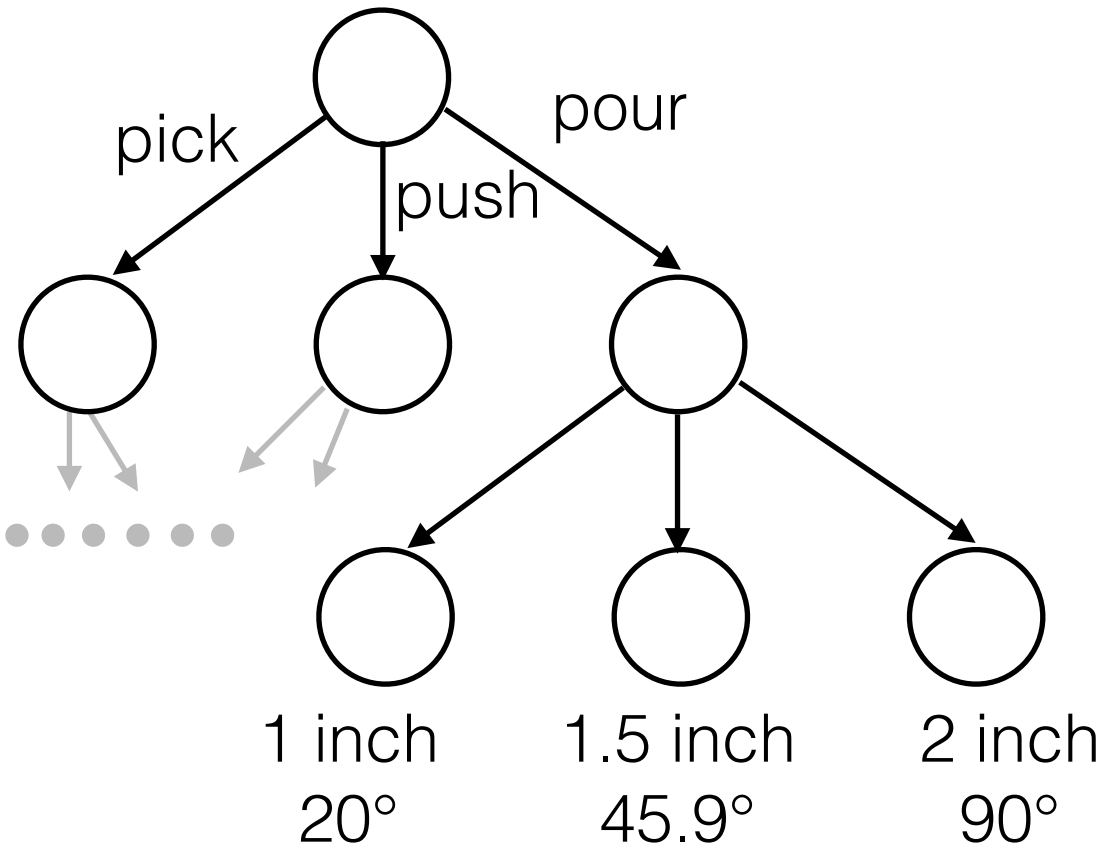


state

pick

pour

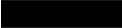
push













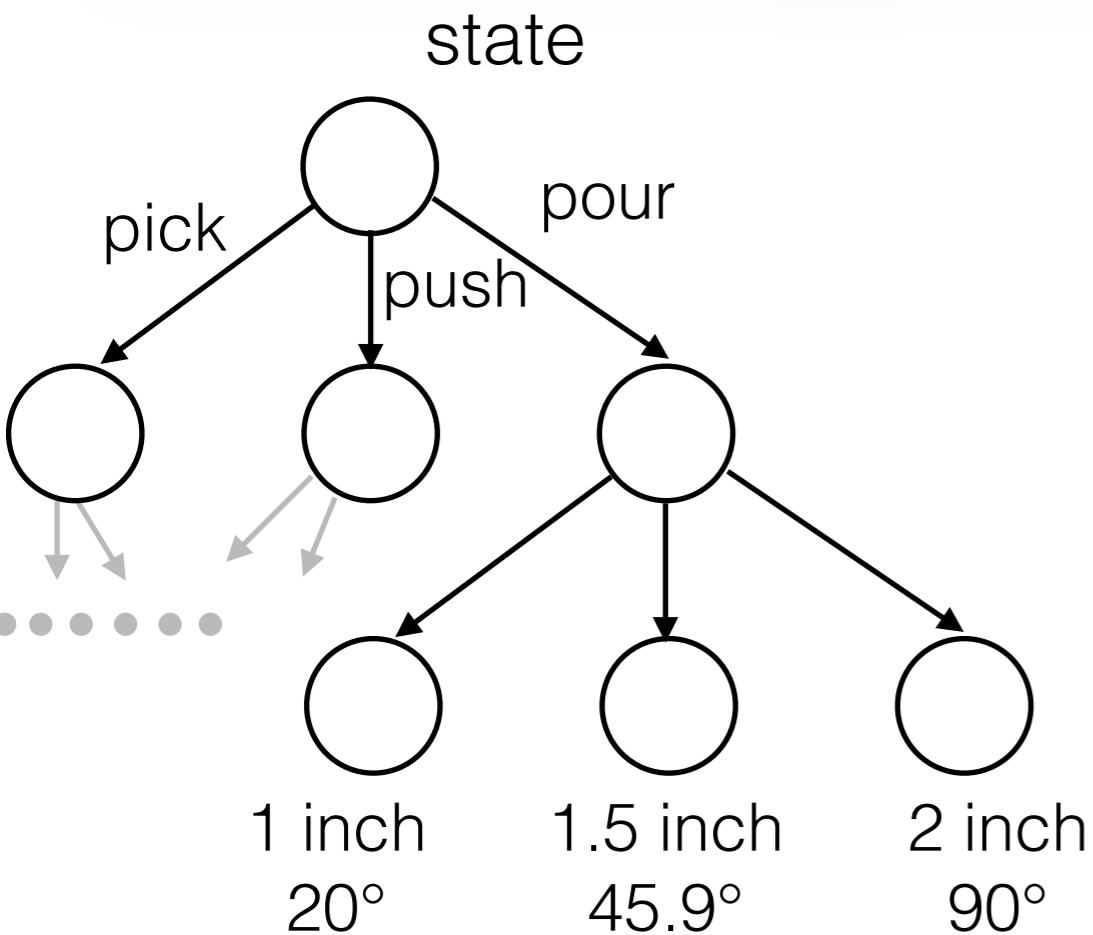




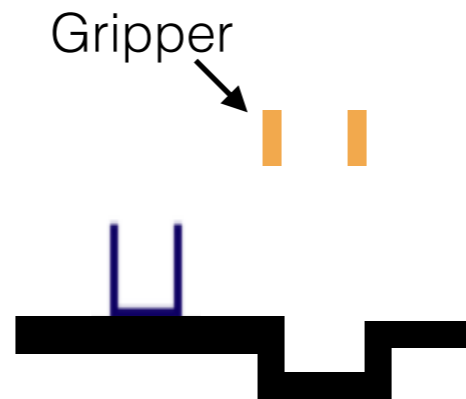
Grippper



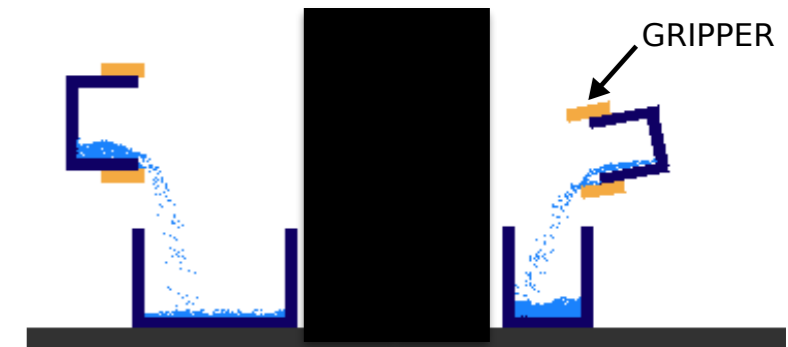
Sampling strategy impacts planning speed



Sampling grasp



Sampling pour



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Diversity-aware sampling

If we have a kernel measuring similarity between any inputs, can define

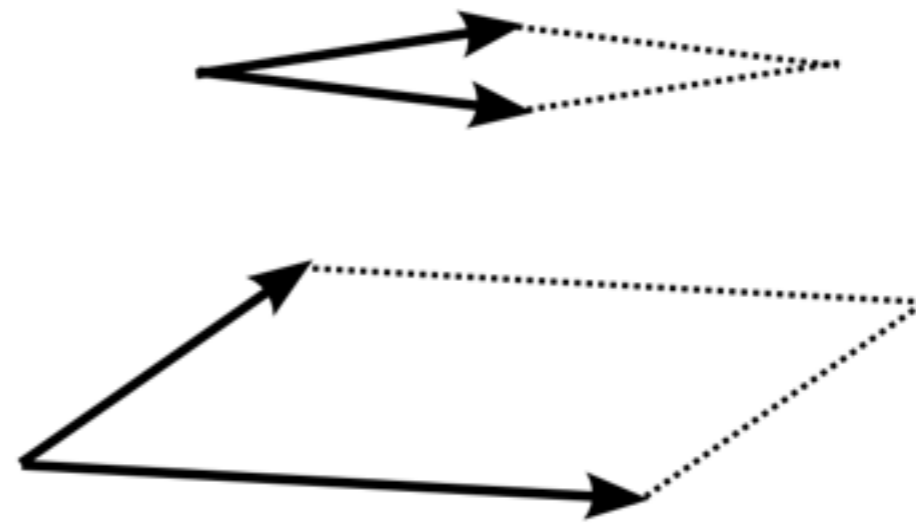
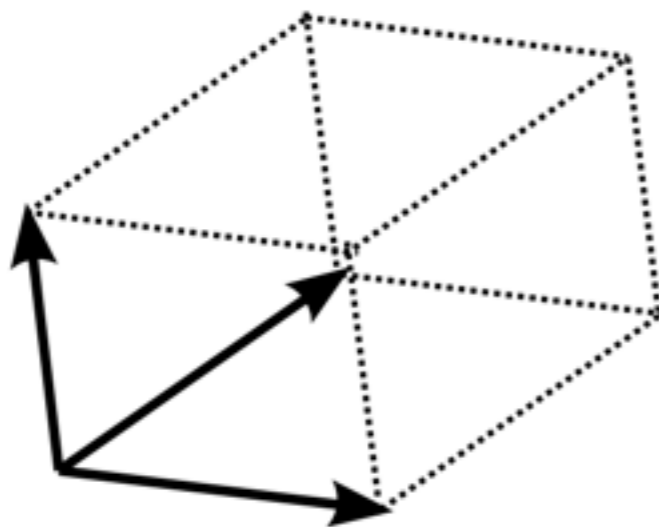
$$D(\{\theta_i\}_{i=1}^n) = \log \det \left(\begin{bmatrix} k(\theta_1, \theta_1) & \dots & k(\theta_1, \theta_n) \\ \dots & \dots & \dots \\ k(\theta_n, \theta_1) & \dots & k(\theta_n, \theta_n) \end{bmatrix} \sigma^{-2} + \mathbf{I} \right)$$

diversity metric

kernel

free
parameter

identity
matrix



[Kulesza&Taskar, 2013]