

# MIT 6.881 Robotic Manipulation

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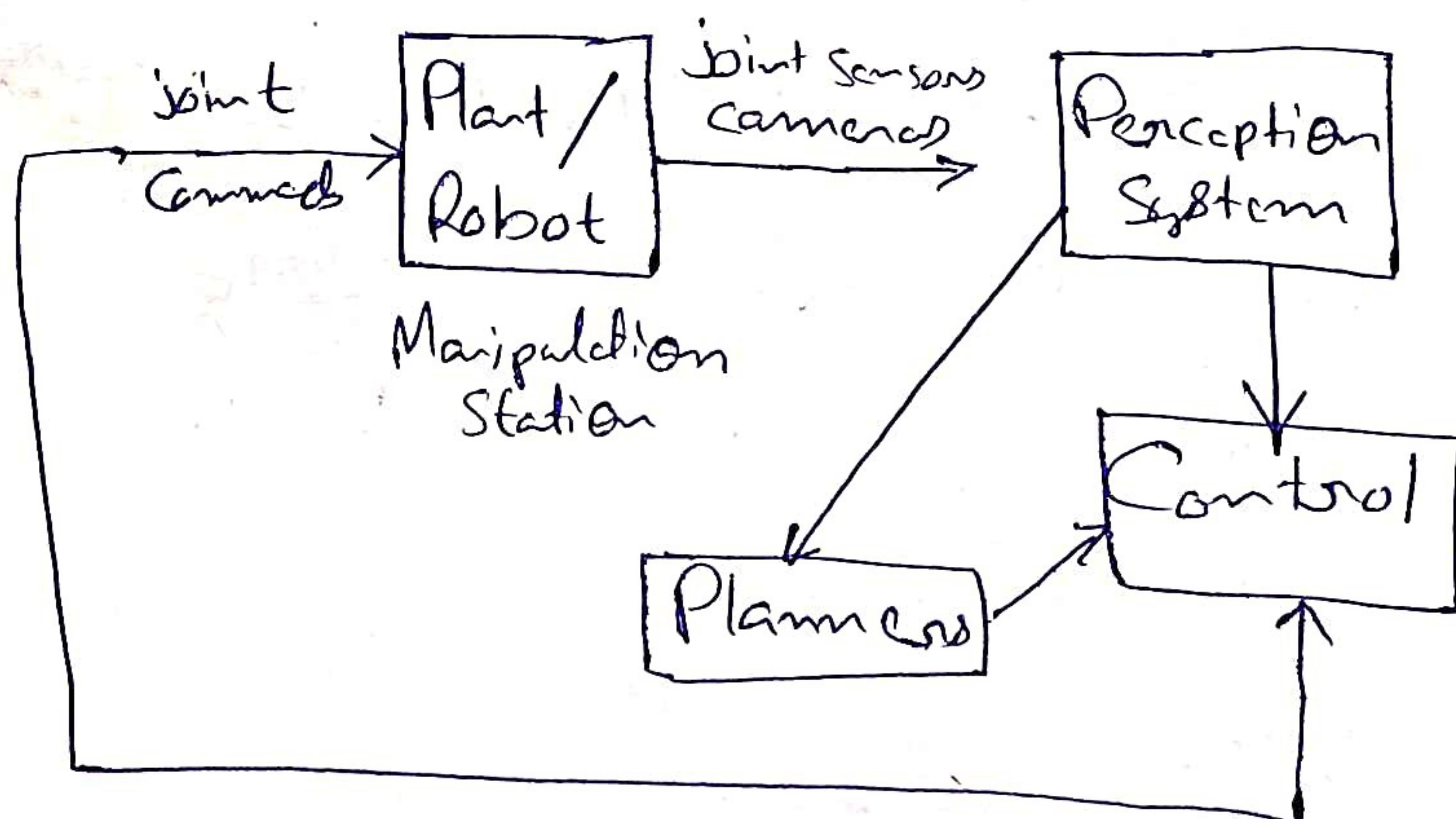
## Introduction: Anatomy of Manipulation System

### Manipulation

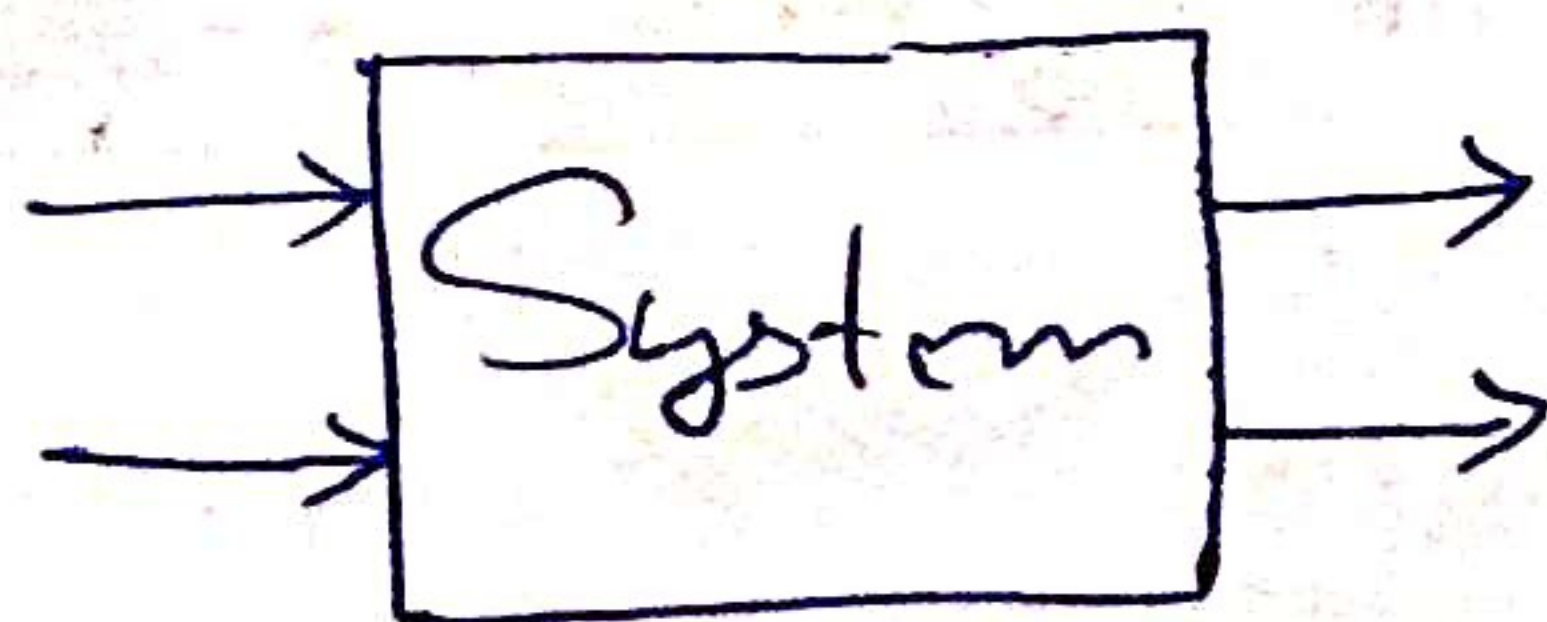
- Manipulation refers to the activities performed by hand
- Agents control of its environment through selective contact.

### drake

- Physics Engine
- Modeling Dynamics System
- Solving Mathematical Programs





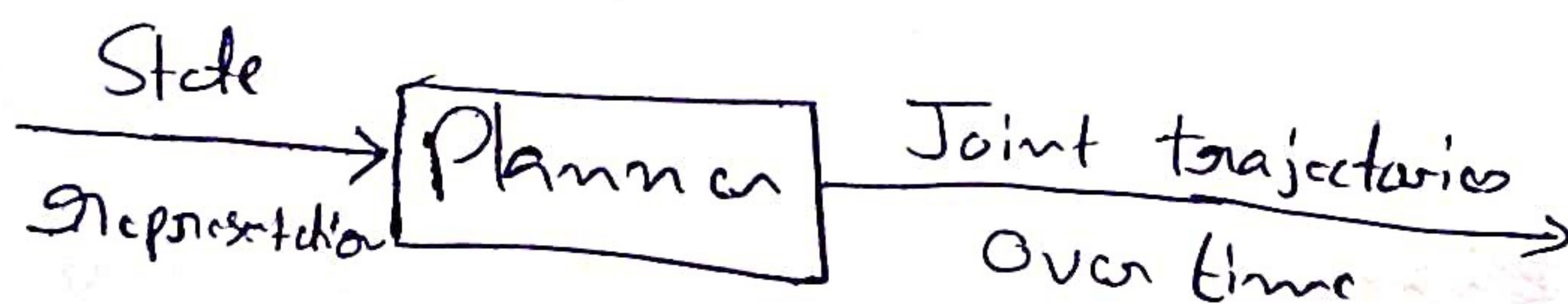


State (discrete, continuous)  
Parameters

\* Perception System:

- Geometric Perception
- Deep Perception

{ Object recognition, Segmentation  
, state representations }

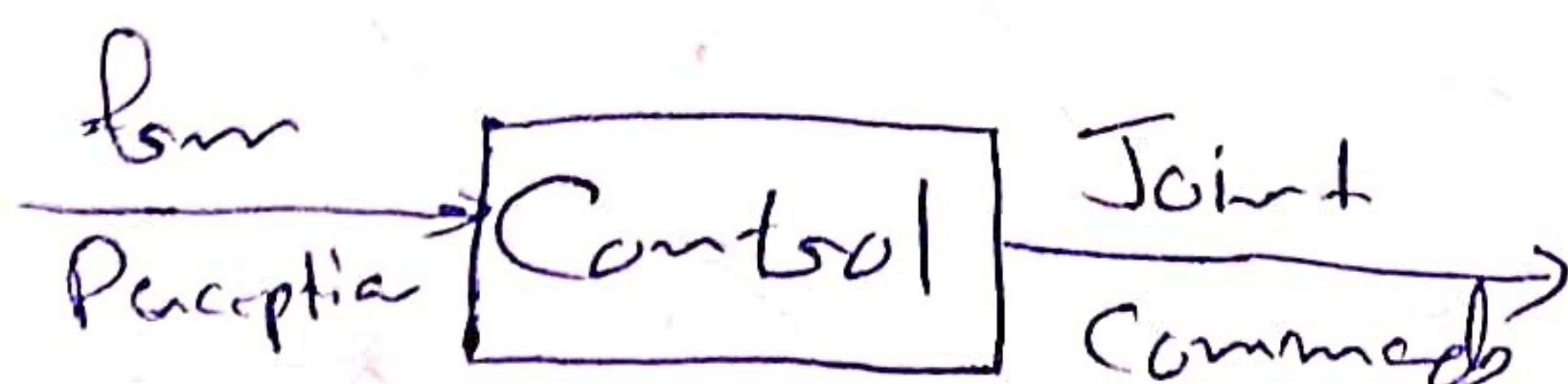


Task level (discrete / Symbolic)

Joint level

→ Task And Motion Planning (TAMP)

Planning with Uncertainty



Multicontact dynamics  
Controlling forces