

Grasp Planning Based on Strategy Extracted from Demonstration

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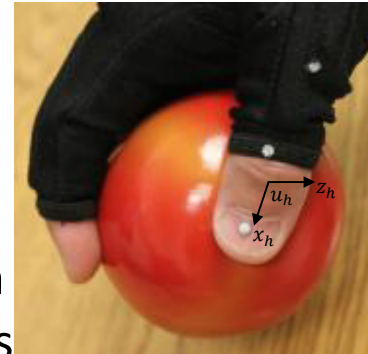
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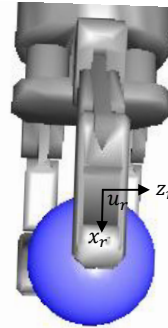


Motivation and Approach

- Generate a good grasp
 - Enable robots to perform a task
 - Maintain grasp during the task
- One approach
 - Learn grasp from human demonstration
 - Map the learning result to robotic hands



Mapped to



- Challenge
 - Don't have the same mechanical structure
 - Difficult to transfer learning results
- Our Solution
 - Extract general strategy independent of the mechanical structure

Opposable Thumb

- Strategies
 - Grasp type
 - Thumb placement
- Apply to robotic hands
 - Find other finger's placements to optimize a grasp quality measure



- General for most robotic hands
- Indicate task intention
- Suitable grasp regions
- Reduce search space

Reduce Search Space

~~Thumb Placement~~

~~Thumb yaw angle~~

Thumb pitch angle

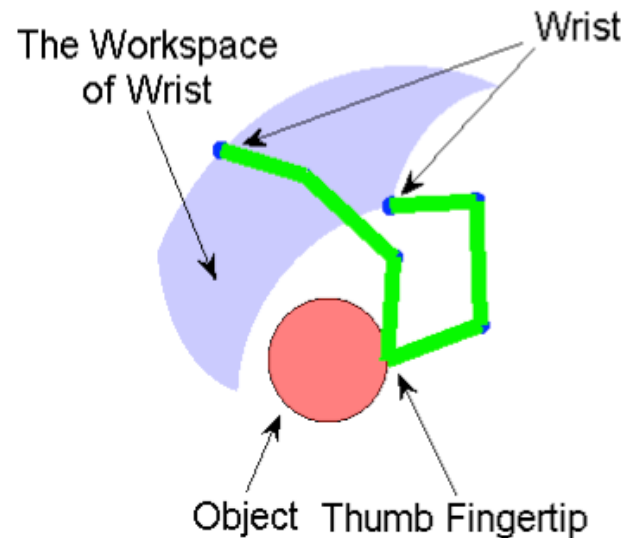
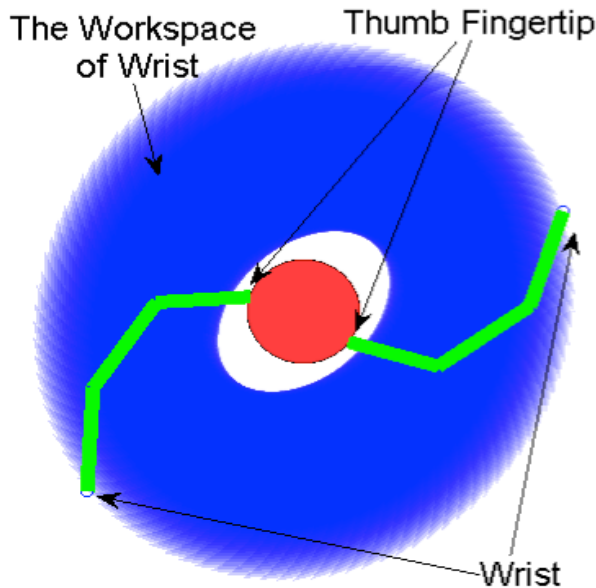
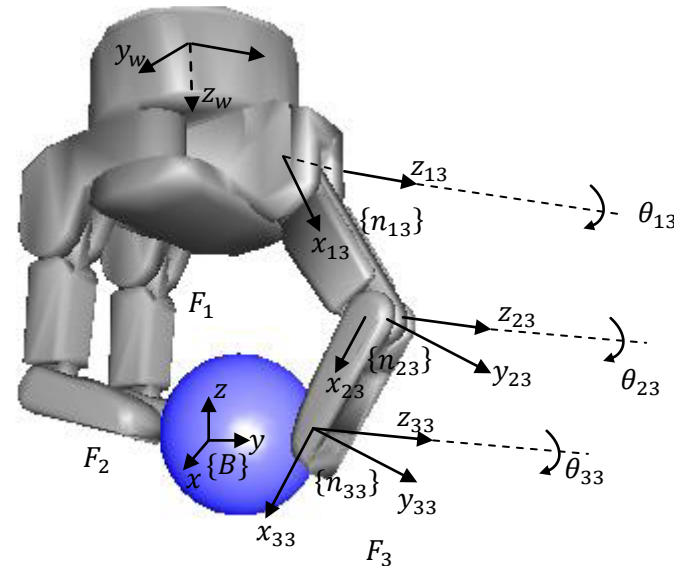
Thumb joint angle



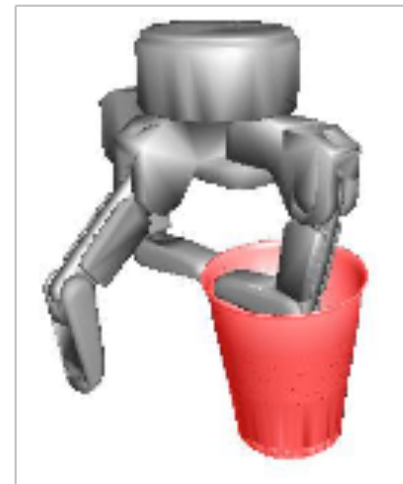
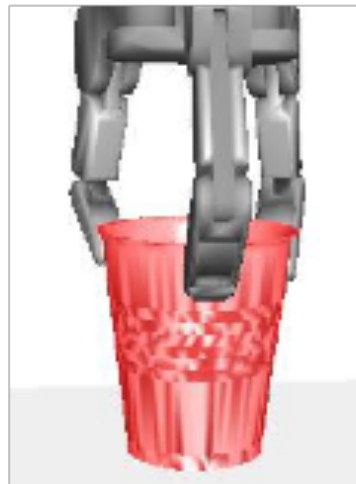
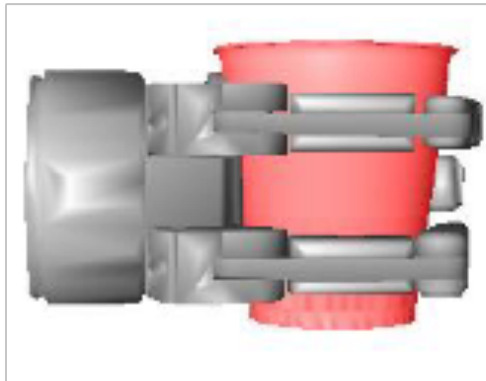
Wrist position and orientation

6-DOF

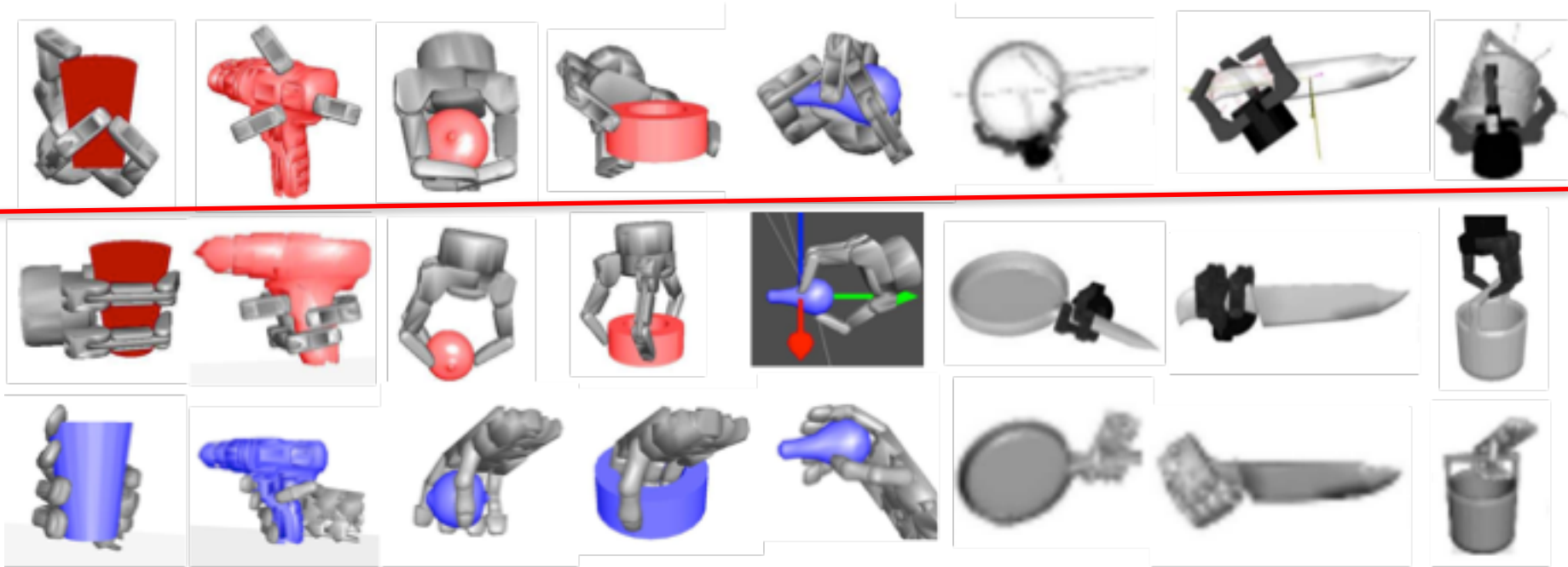
2-DOF



Indicating Different Tasks



Results



References

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