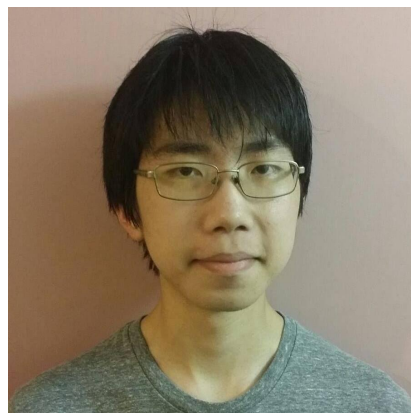
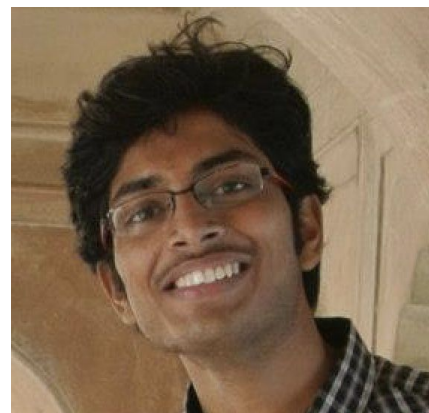




Reinforcement Learning of Active Vision for Manipulating Objects under Occlusions



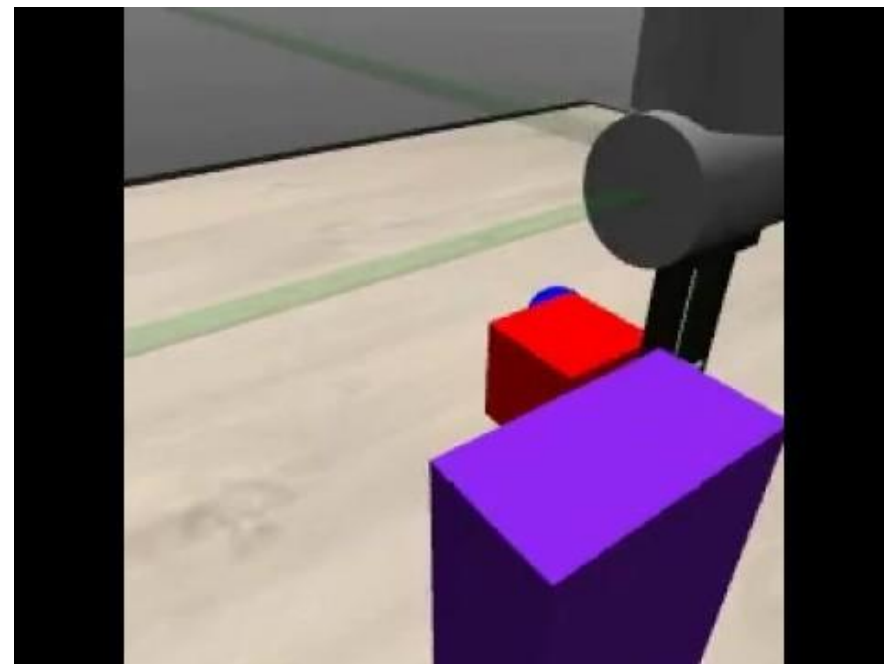
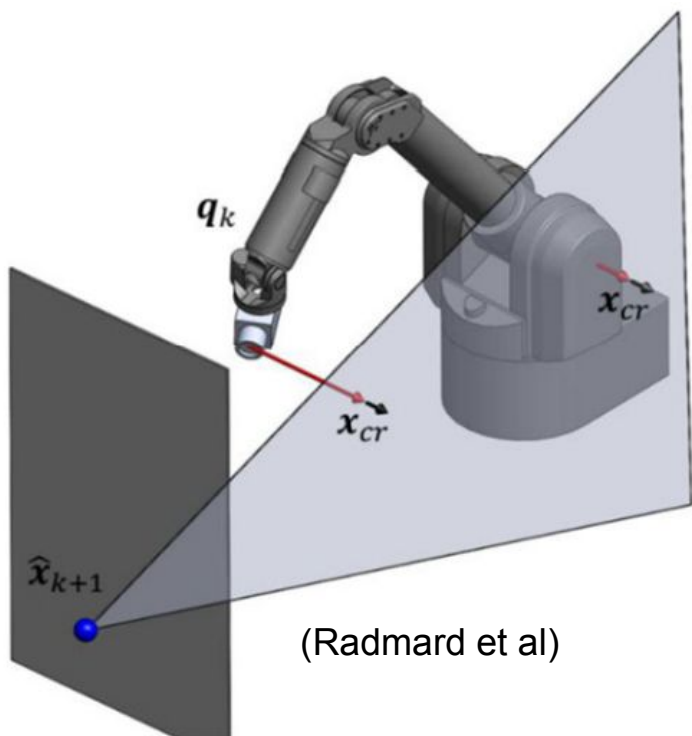
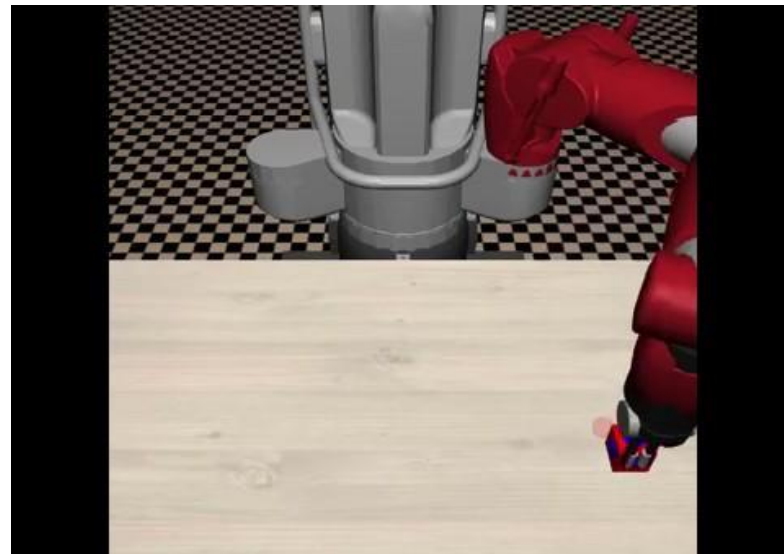
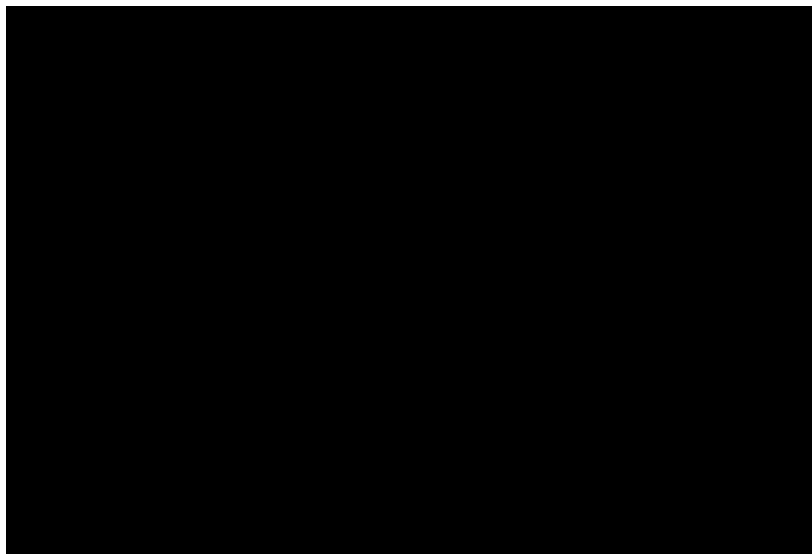
Ricson Cheng



Arpit Agarwal



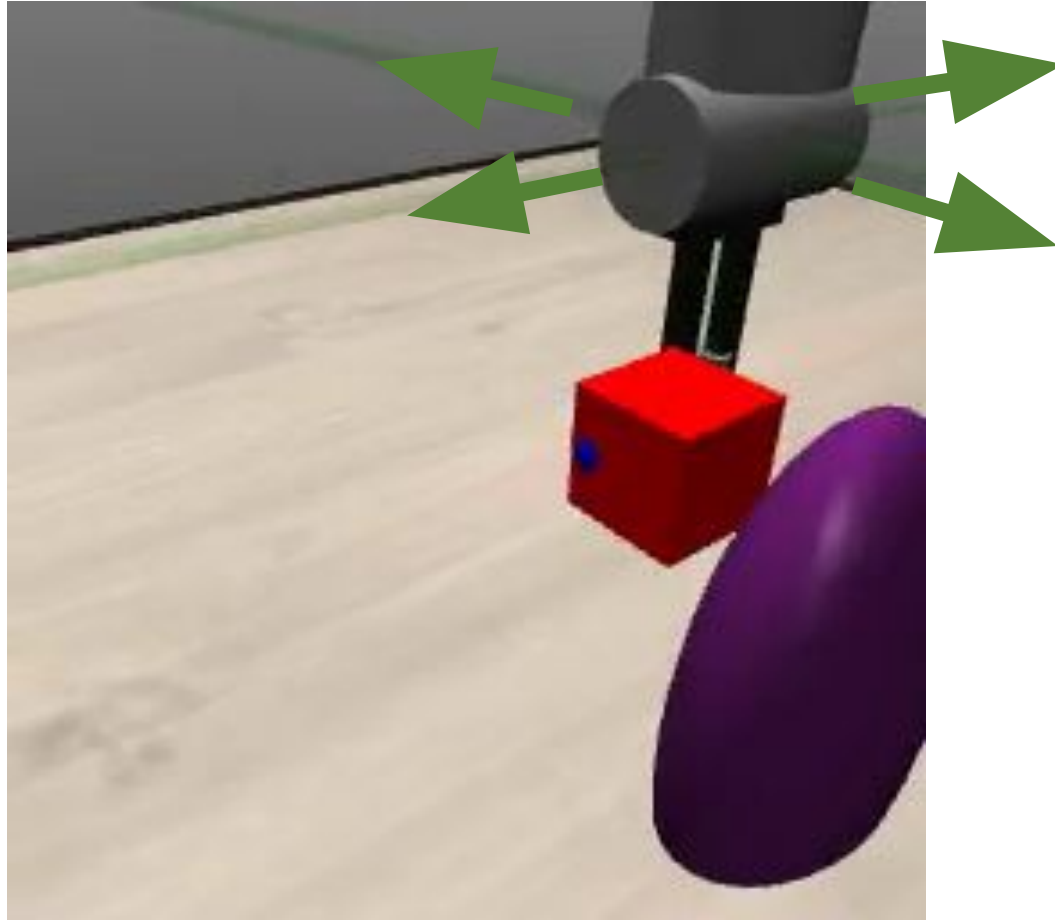
Katerina Fragkiadaki



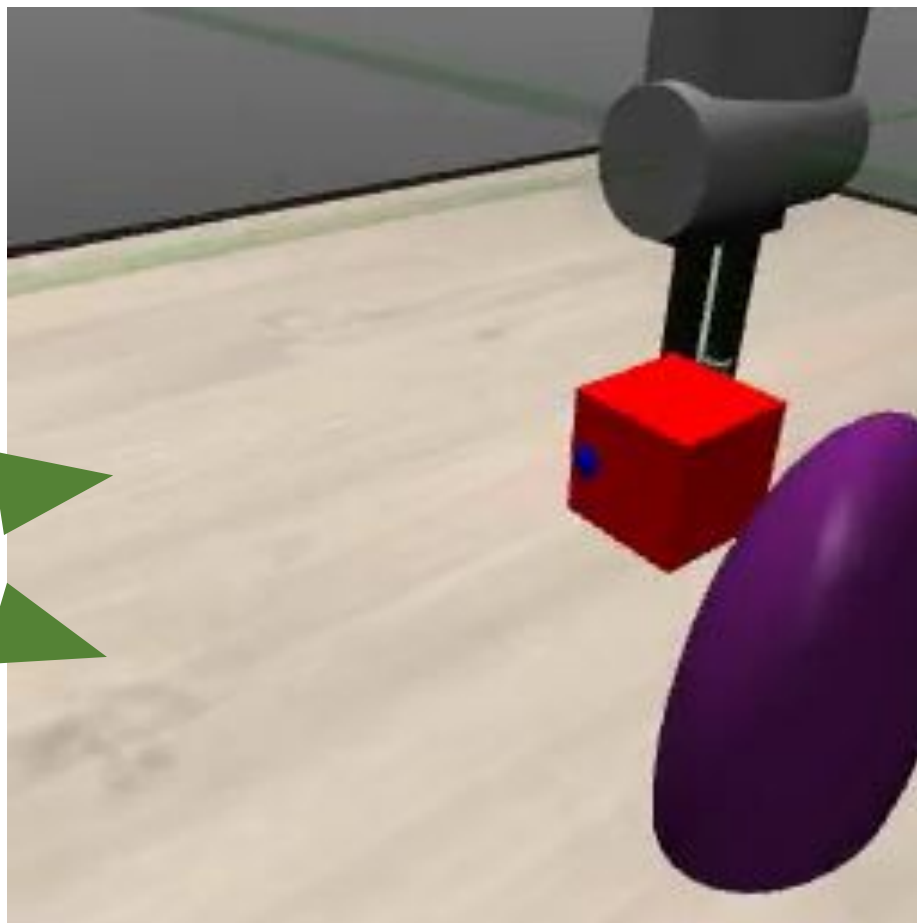
Proposed Method

1. Combine active vision with manipulation
2. Active vision policy is trained to maximize success for the manipulation task

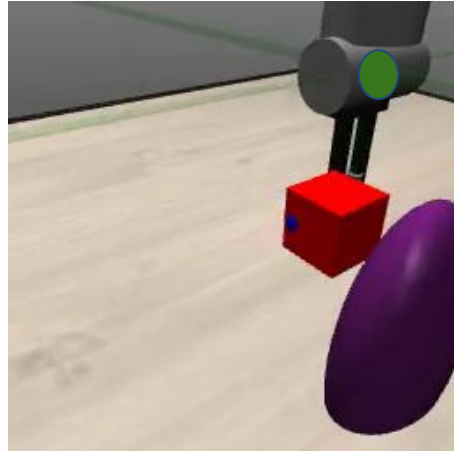
Robot Controls



Camera Control

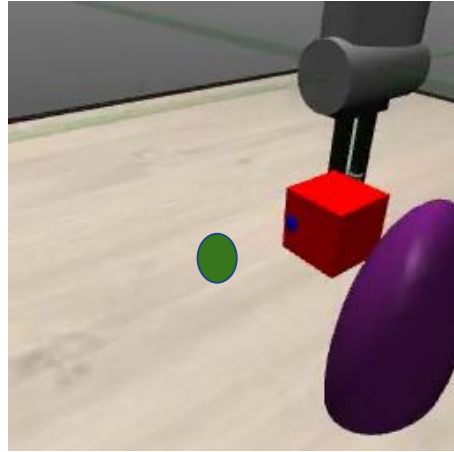


Our model



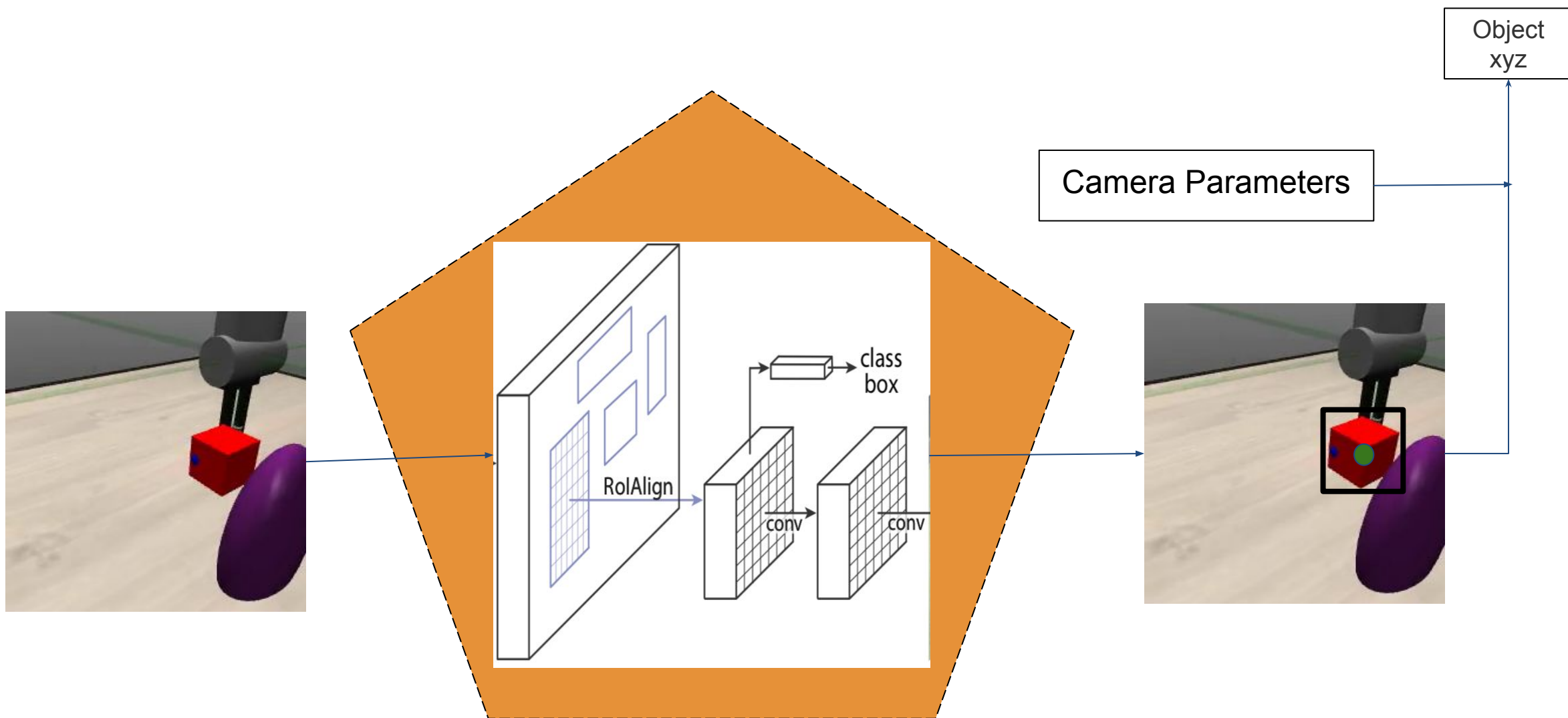
Gripper
centroid

Our model

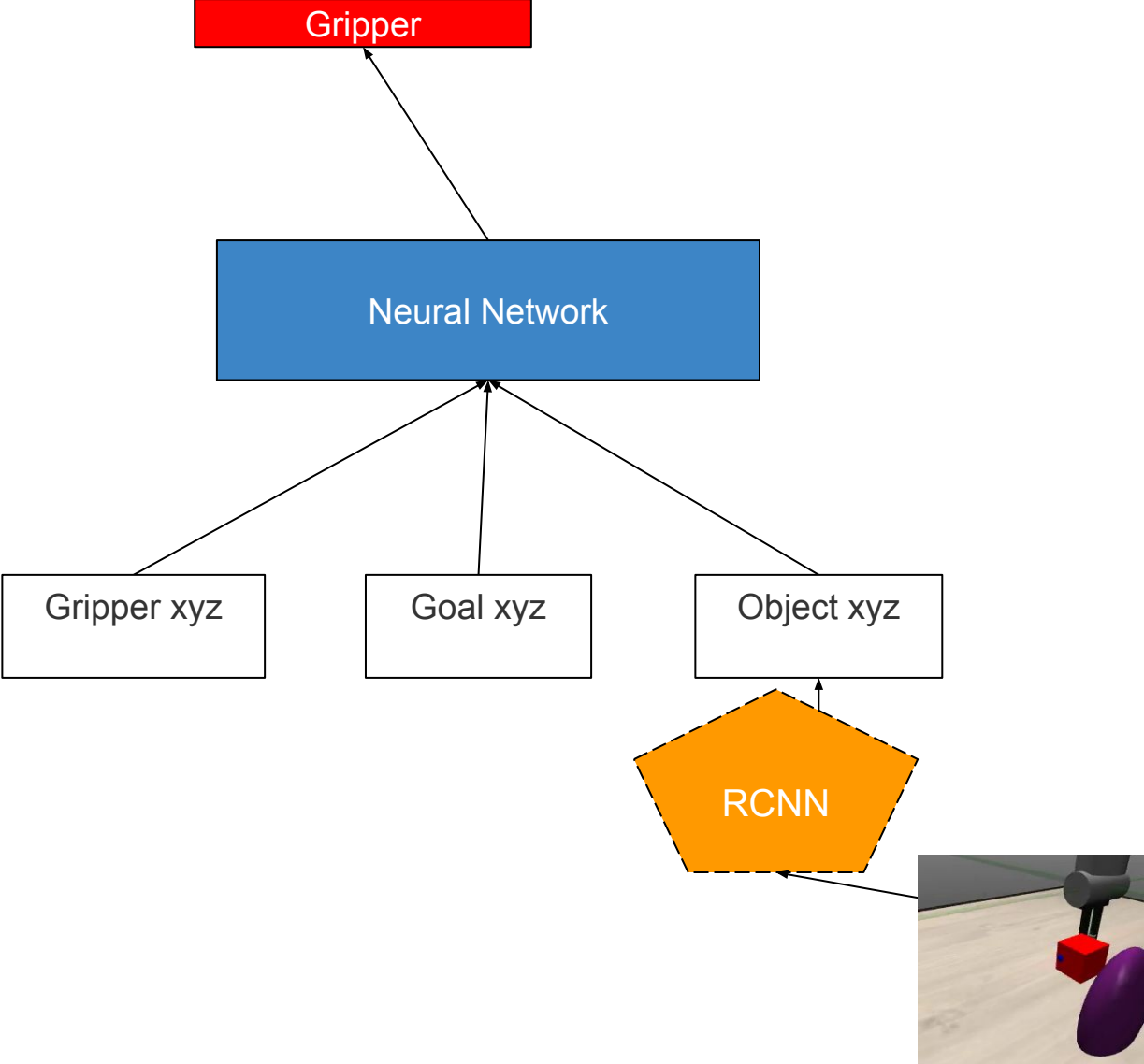


Goal
location

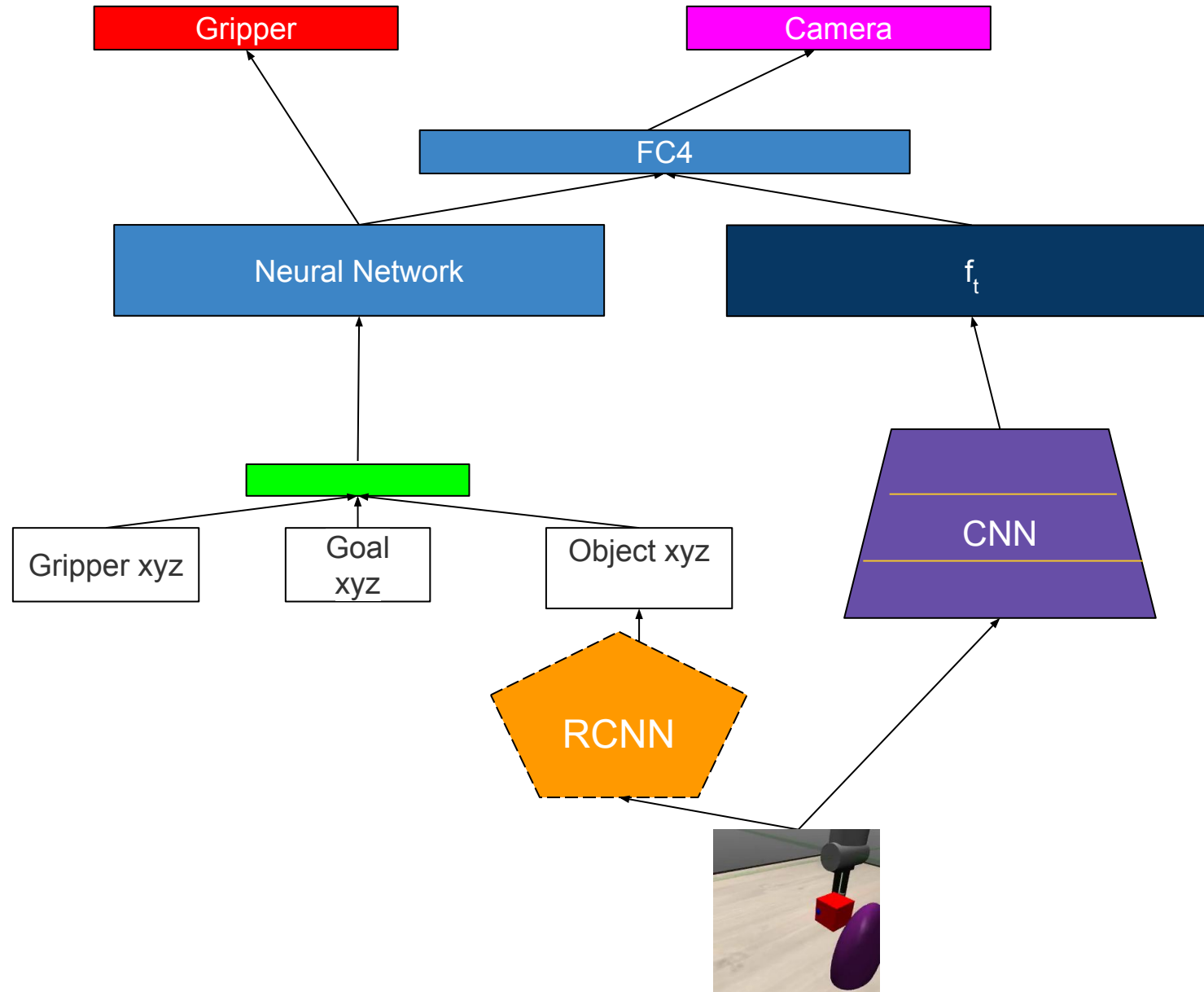
Our model



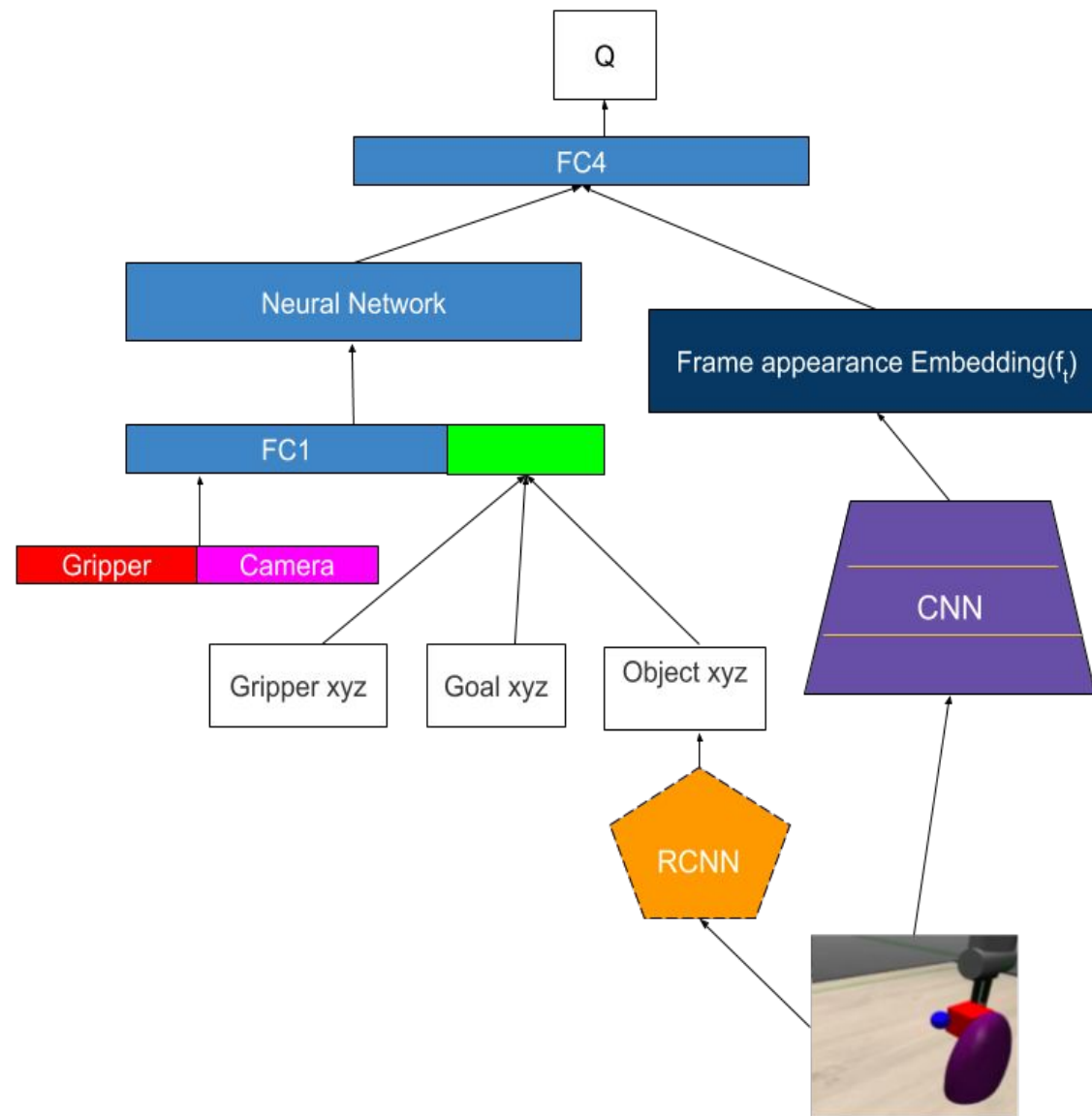
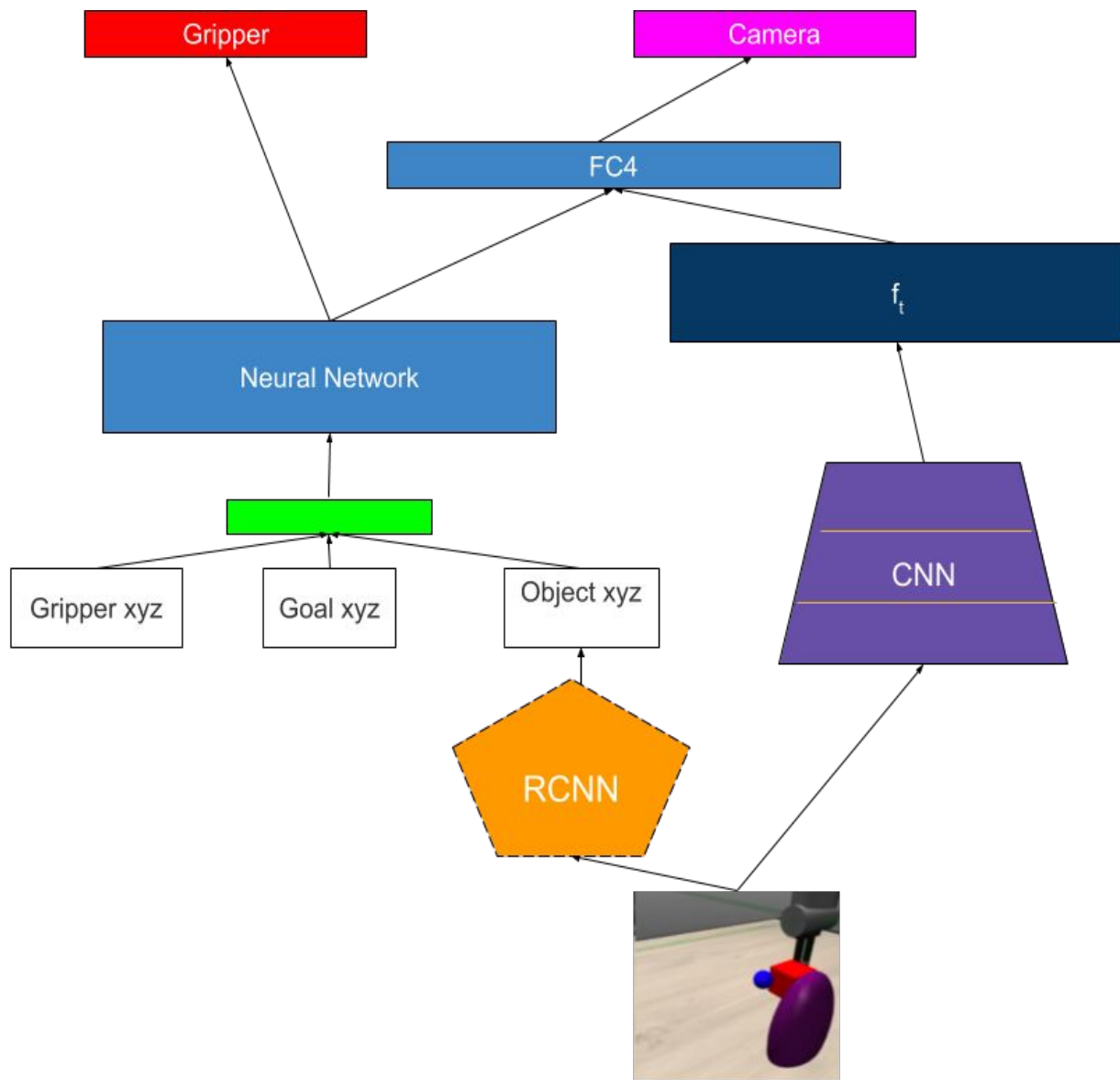
Our model



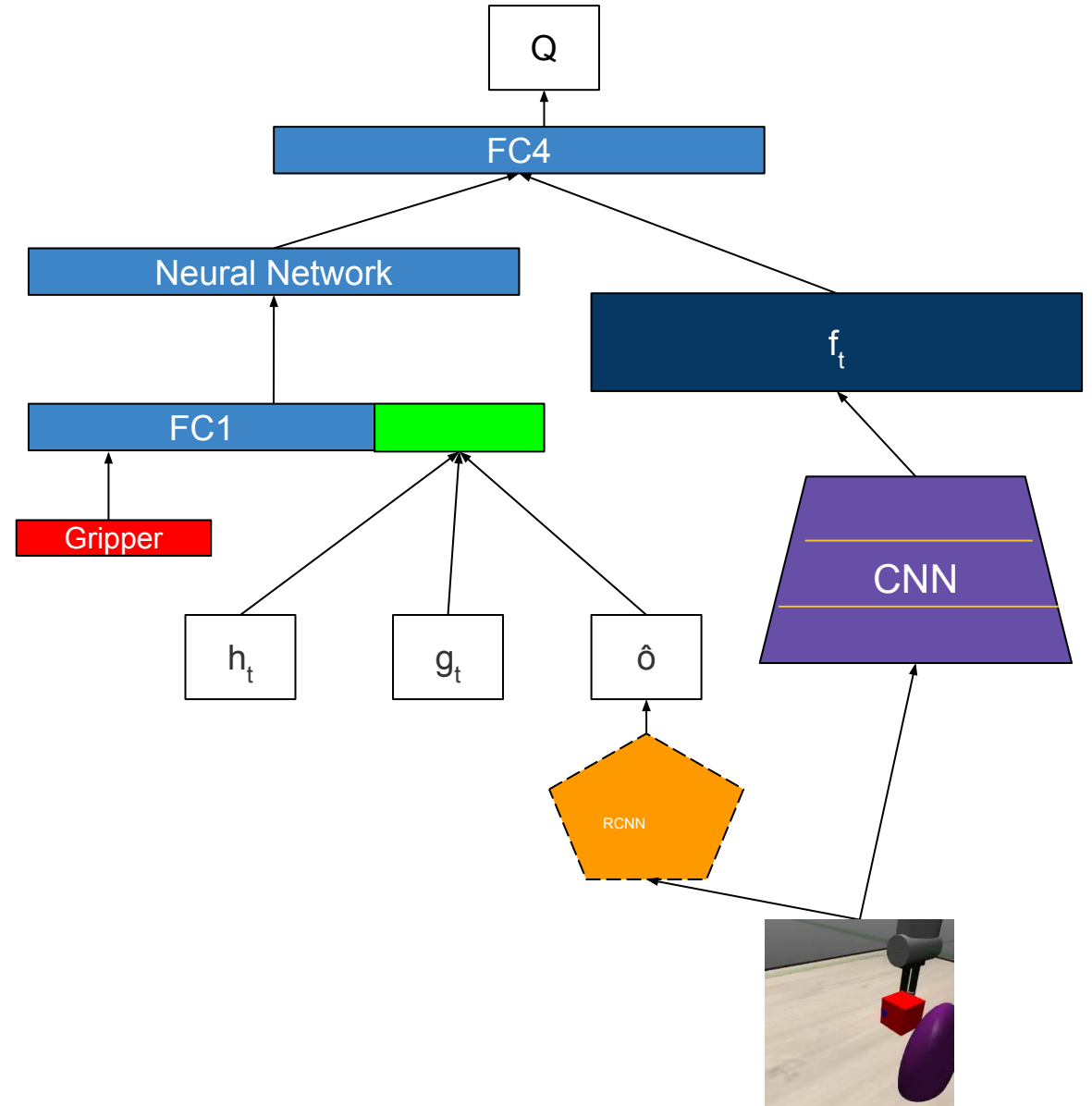
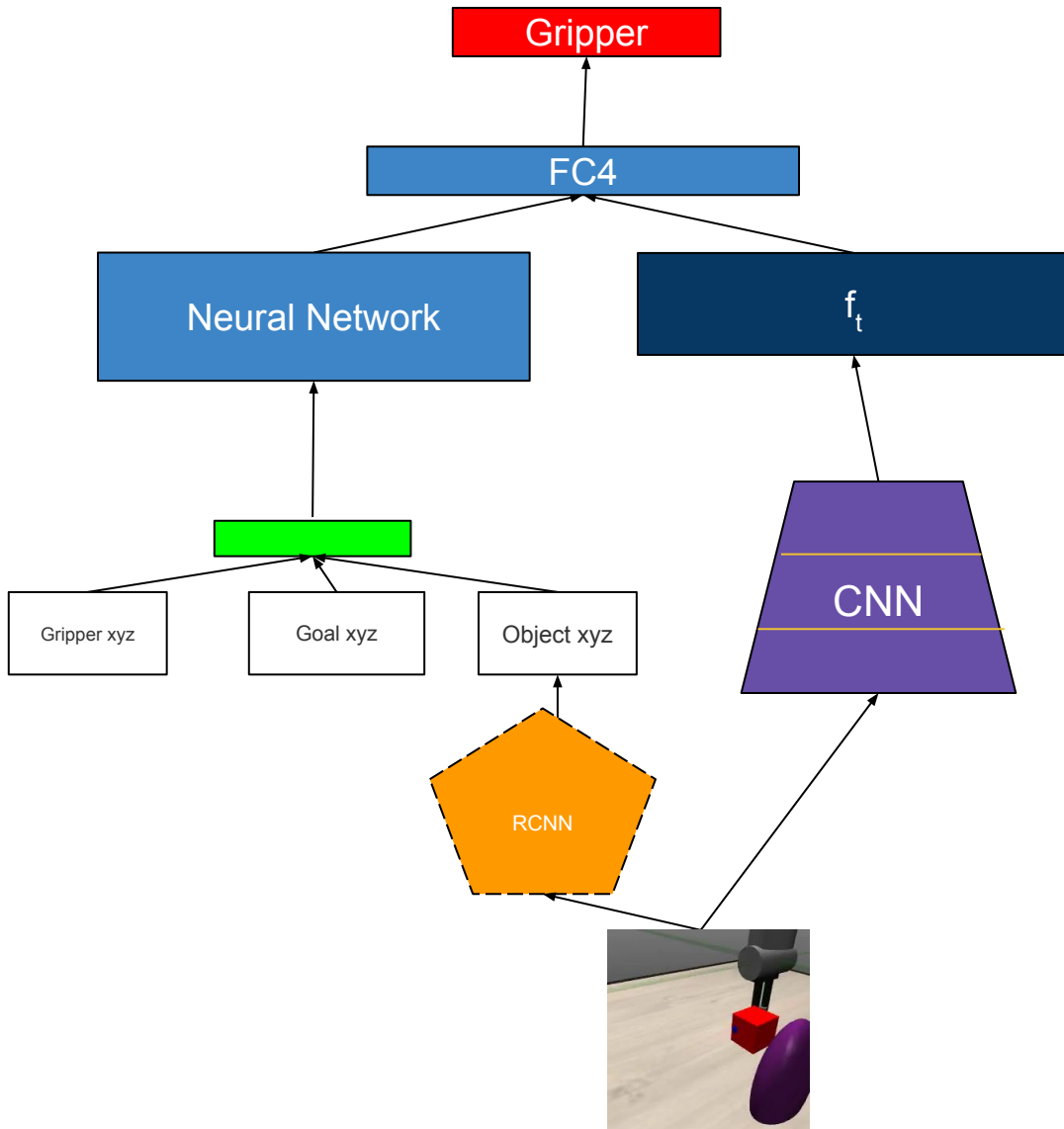
Our model



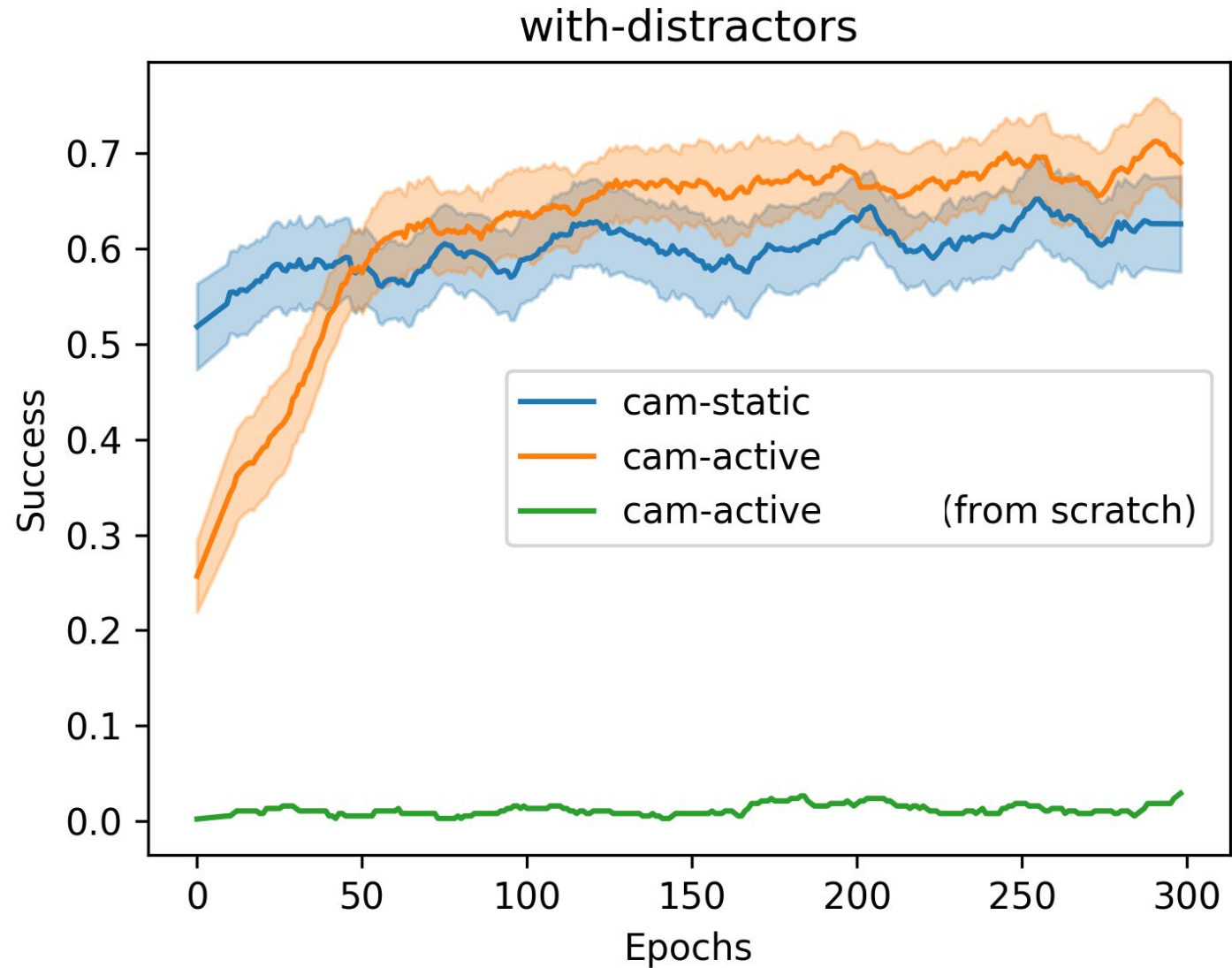
Our models



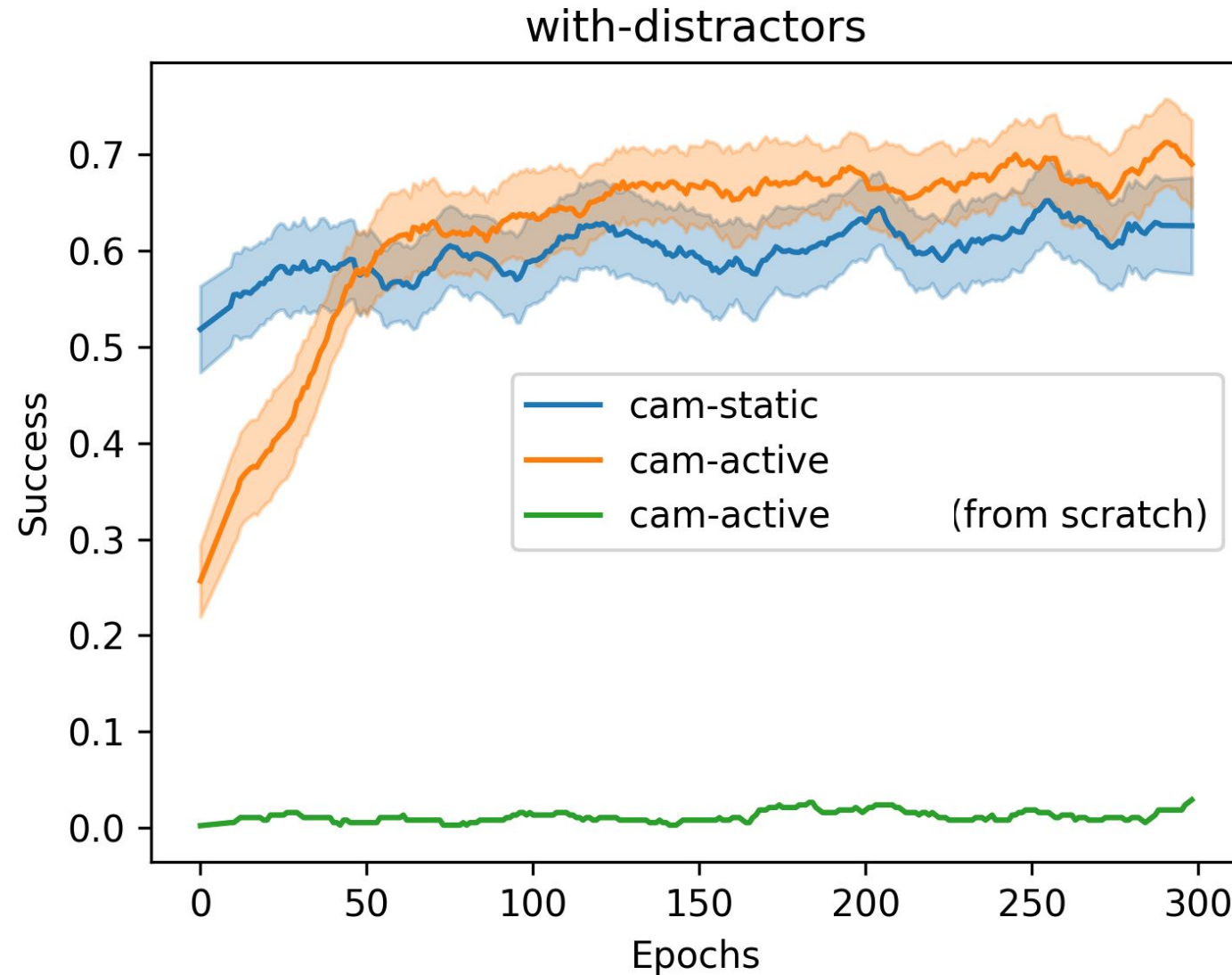
Our baselines



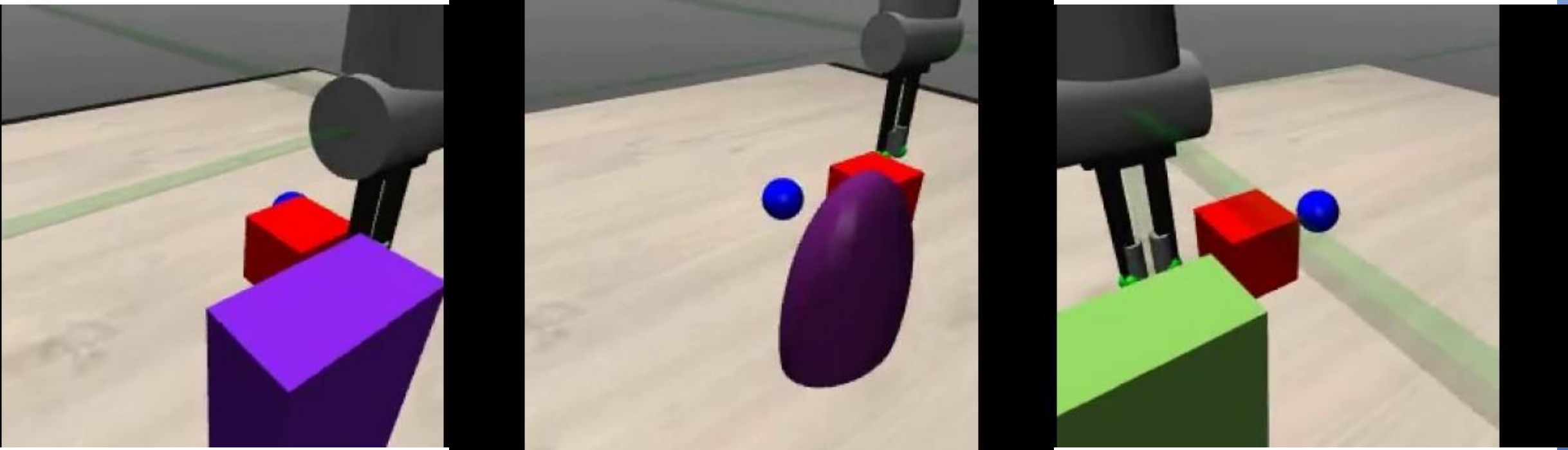
Results: active camera helps



Results: curriculum learning helps



Results



Check out project page for videos and code!

Project Page: <https://github.com/ricsonc/ActiveVisionManipulation>

Conclusions

- A method for active vision, in which we proposed architectures for joint hand-eye coordination in the presence of environmental occlusions.

Benefits:

- **Curriculum Learning:** Essential to train in environments with occlusions.
- **Active vision manipulation:** Make learning tasks easier due to more information available