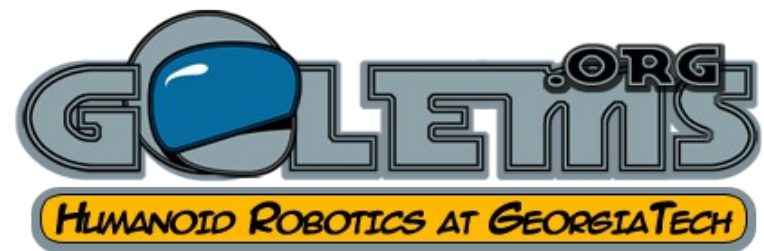


Open Up!

Towards the Use of Human strategies to address pose uncertainty in grasp planning

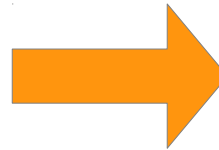
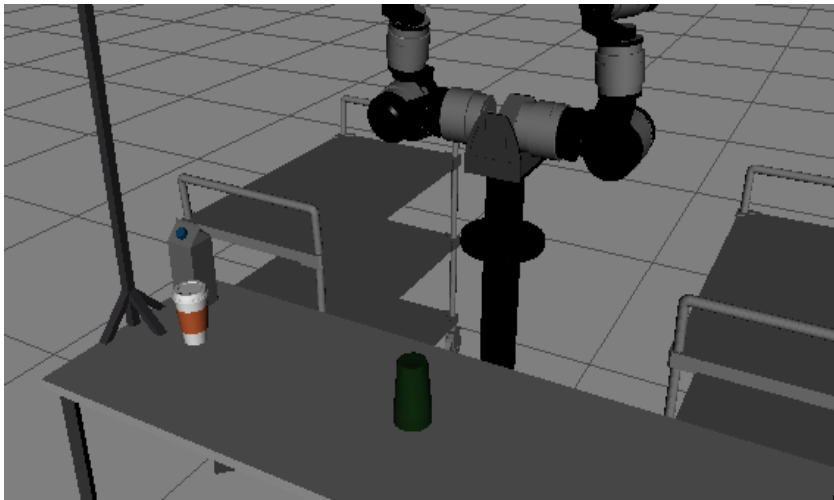
Ana Huaman Quispe and Mike Stilman

Institute for Robotics and
Intelligent Machines
@Georgia Tech

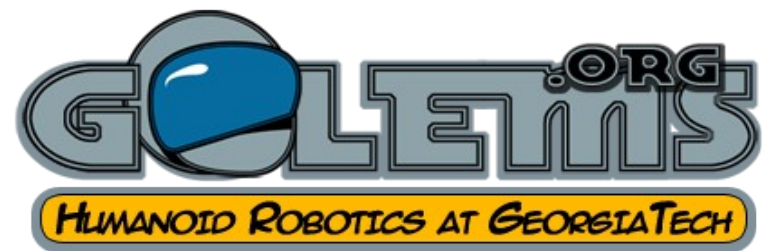
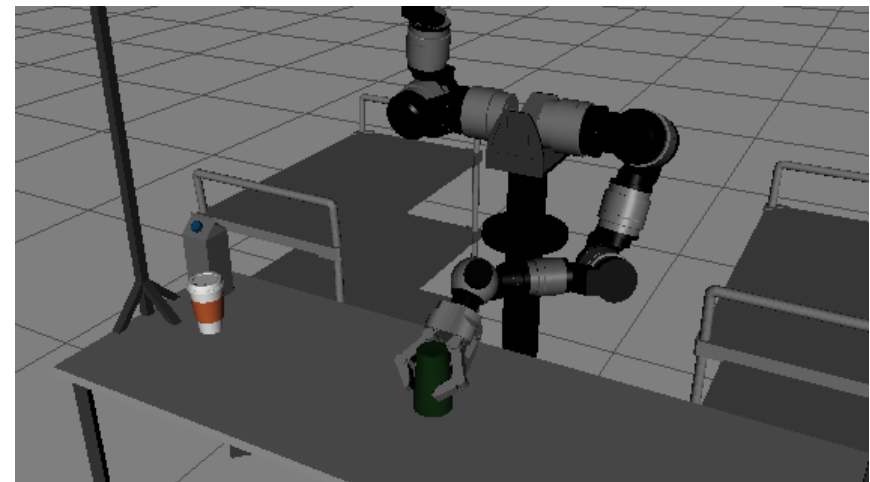


The Problem:

Start conditions

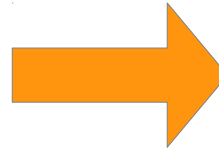
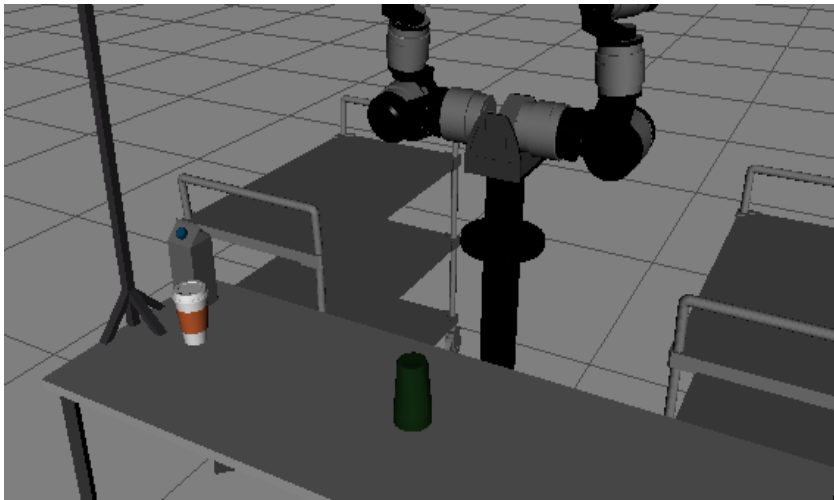


Goal conditions

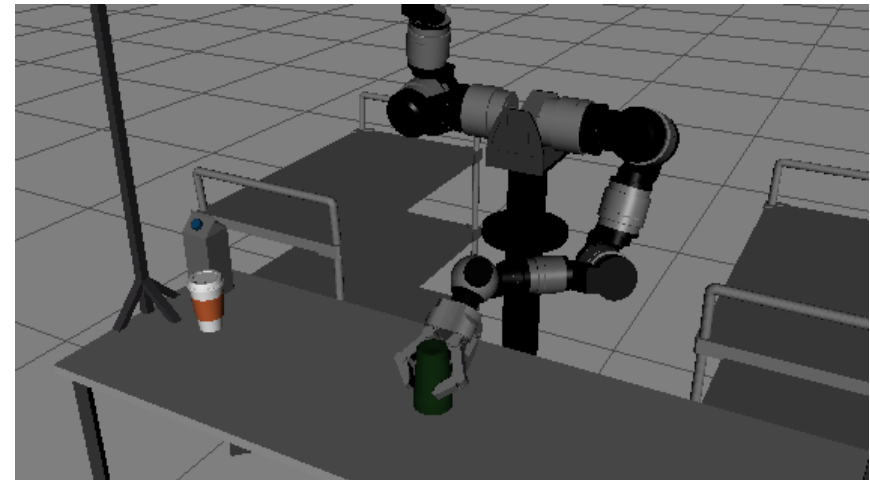


The Problem:

Start conditions

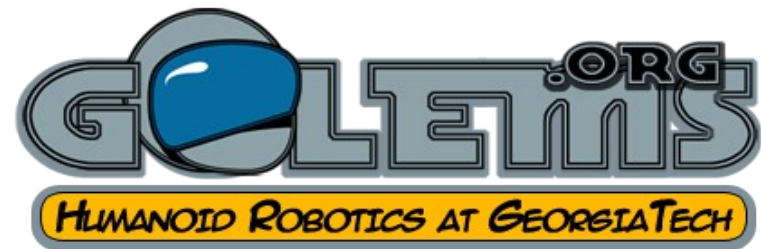


Goal conditions

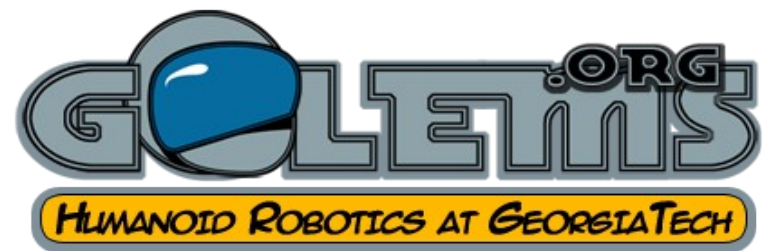
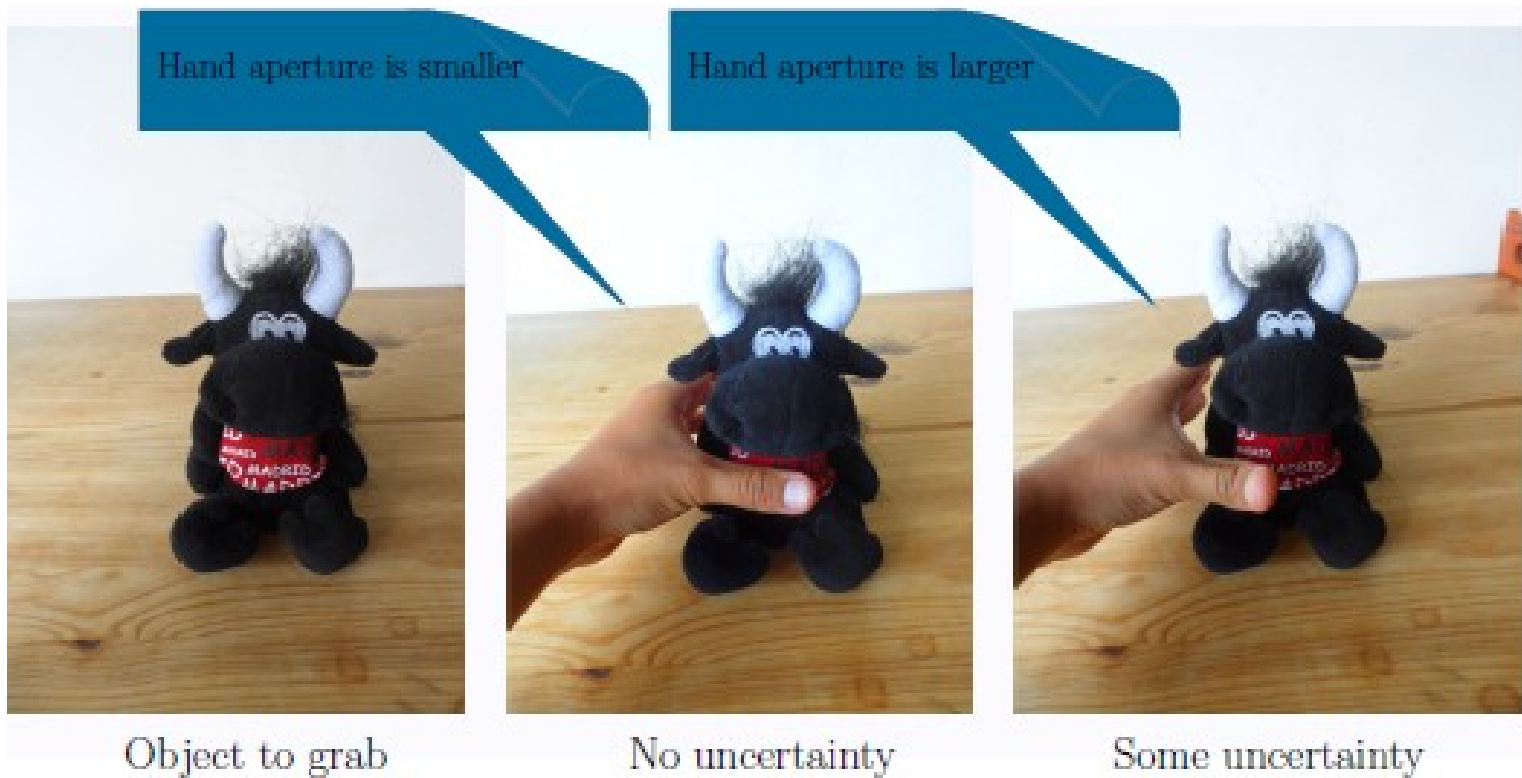


WHY IS IT SO HARD?

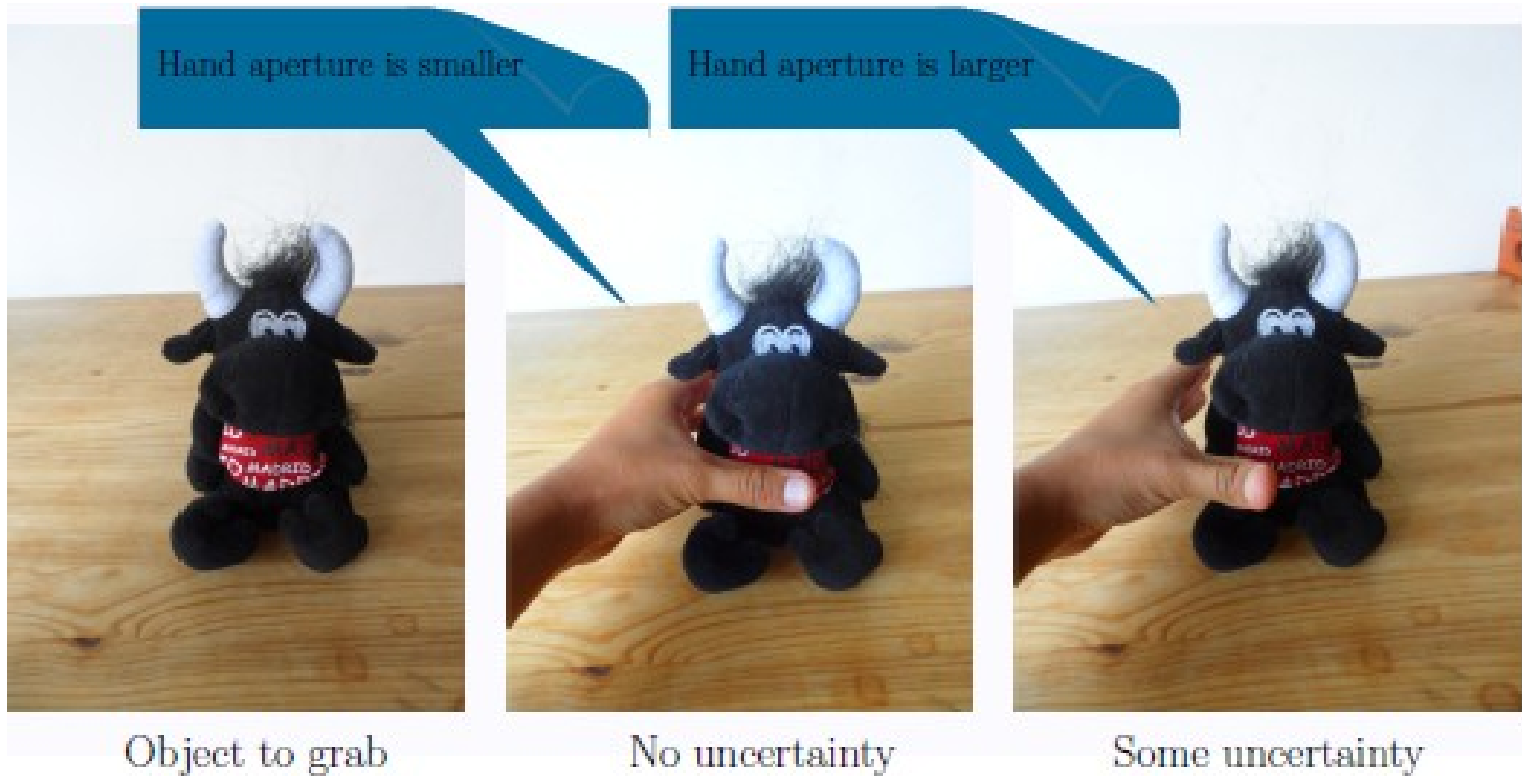
- **Perceptual errors**
- Actuation errors
- Modeling errors
- And so the list goes...



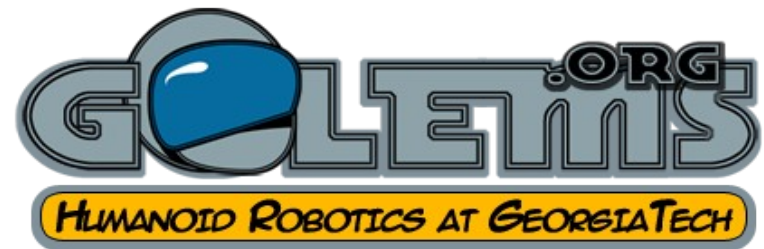
How do WE solve the problem?



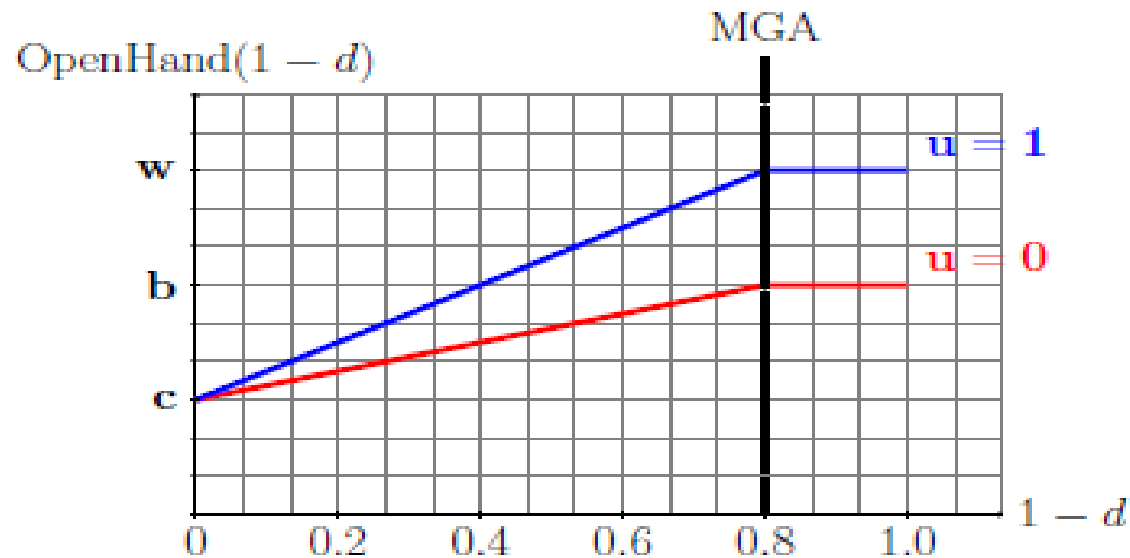
How do WE solve the problem?



We vary our hand aperture according to the uncertainty perceived!

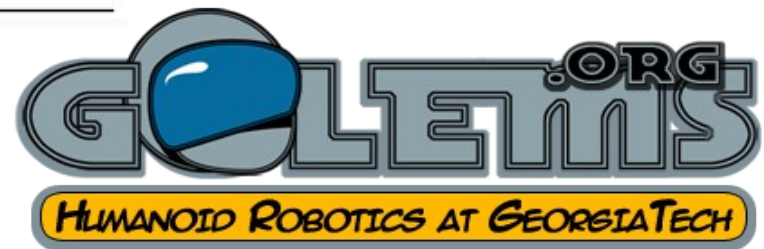


Propose: Vary hand aperture along the execution of reach movement



Algorithm 3: OpenHand(d)

```
if  $1 - d \leq MGA$  then
  return  $c + \frac{(1 - d)}{MGA} [(b - c) + (w - b)u]$ 
else
  return  $b + (w - b)u$ 
```



Results: Grasps feasible in presence of mild perception errors

Plans for the LWA4 7DOF by using [1]

