* Cornell’s Personal Robotics Lab created a robot that can clean up after people
* The robot basically:
  + 1. Evaluates the room
  + 2. Identifies the objects
  + 3. Puts each object where [it thinks] it belongs
* Robots in the past could place a single object on a flat surface (but this one can put multiple objects in many complex places)
* PANDA
  + PersonAI Non-Deterministic Arm
* POLAR
  + PersOnaL Assistant Robot
* Considers nature of the object
* Determines where to put the object
* Learns from previous experiences
  + Example: it doesn’t put a shoe in refrigerator
  + Also, it has to distinguish between flat surfaces like the floor and a table
* 98% successful in identifying and placing objects it had seen before
* 80% successful for placing new objects
* Objects with ambiguous shapes are hardest to place
  + Clothes, shoes, etc.
* Microsoft Kinect 3-D camera scans room
* Robot’s computer breaks image up into chunks based on different colors/shapes
  + Can be trained to store different objects and their common characteristics
* Groups of blocks converted to objects
  + Based on closest-matching blocks in database
* Computer breaks image up into blocks of potential, stable target spaces
  + Can be fed images as examples of either good or bad placement sites for future reference
* Chooses placement space with best stability and fit
* Simulates a graphic of moving object to placement destination
* Follows those movements robotically
* Even with a high success rate, the robot can still break objects (like ceramics, etc.)
* Robot only takes in parts of the object, so it relies heavily on shape (might confuse a bowl with a globe)
* Are there any possible improvements?
  + Higher-resolution camera to better identify
  + Pre-program robot with 3D models of objects
  + Use touch feedback to verify object is stable