Amazon receives thousands of new unique products a day, requiring a variety of robot grippers to handle. How do we determine which object requires which gripper?

**Challenge**

**Approach**

1. **Break down** an object into its attributes
2. **Classify** an object into a **workcell** type

**Implementation**

We developed an end-to-end simulated and real autonomous robot object manipulation stack and used our findings to inform our taxonomy framework.

**Taxonomy**

- *Object Property*
  - Mass
  - Shape
  - Rigidity
  - CoM

- *Workcell Type*

  - Each cell is a dedicated evaluator which outputs a graspsability score and confidence for a workcell.

  - Framework is extensible to new types of object properties and new workcell types.

  - Graspsability scores and confidences are merged for each workcell.

  - Weighted Ranking Generator

  - Scores are weighted by logistical factors such as workcell cost or availability.

- *Evaluator*
  - Score: How likely is it that the workcell can pick up the object?
  - Confidence: How confident are we in the score?

- *Selected Workcell:* 

- **Stations each with a gripper & defined limitations**

- **Planar**
  - Cereal boxes

- **Suction**
  - Planed bottles

- **Tactile**
  - Pimple

- **Casters**

- **Posters**

- **Team**
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  - Liaisons: Greg Longtine & Nathalie Hager