

Physical Structure

Liquid Volume



Which container has larger volume?

Deformable



Is that a peach or a mug under the cloth?

Rigid Containment



How to fit all toys into the containers?

Reflection Authoring



Is the plant in the mirror or real?

Specular Reflection

Spatial Relations



Which object is closer to the observation position?

Correspondence



Which bag corresponds to the reflected one?

Enumerative Perception

Counting w Occlusion



How many air purifiers are there?

Spatial Segmentation



How many kettles are there in this scene?

Merged Observation



How many apples are there in this scene?

Partial Occlusion



Is that a golf stick or an umbrella behind the wall?

View Hallucination



Is there a cabinet there?

Material Transparency



Is the chestnut inside the glass?

Category Ambiguity



How many sandwiches are there?

Structural Enclosure



How many balls are there in this scene?

Illumination Variability



How many fillets are there in this scene?

Cognitive Mapping

Connectivity



Is the living room and the kitchen connected?

Traversable Passage



I need to navigate from the bedroom to the living room. Do I have to pass through the kitchen?

Long-Term Navigation



I need to navigate from the living room to the kitchen. Which room should I go through first?

Metric Comparison

Dimensional Size



Which vase is larger?

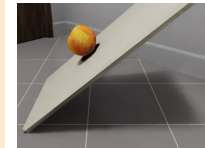
Spatial Distance



Which flower is closer to the table?

Physical Dynamics

Inclined Plane



Can the apple rest on the slope?

Regional Boundary



Is the sink and the chair located in the same area?



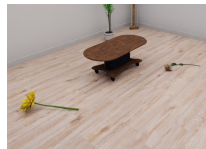
Yes, you do.



The piano room.



The one under the table.



The darker one.

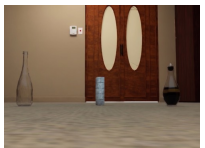
Stacking & Stability



How to stack and stabilize the three objects?

Spatial Relations

Linear Alignment



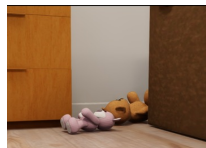
Do the three containers form a line?

Geometric Configuration



Do the cups form an equilateral triangle?

Physical Contact



Do the two teddy bears touch?

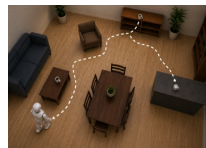
Temporal Understanding

Unobserved Change



Is there any change inside the closed box?

Agent Observation



How many mugs did the other robot pass by?

Action Sequencing

Action Order Inference



What's the action sequence given spatial constraints?