

# To Understand Indicators of Robots' Vision Capabilities

RARE LAB



Hong Wang



Tam Do

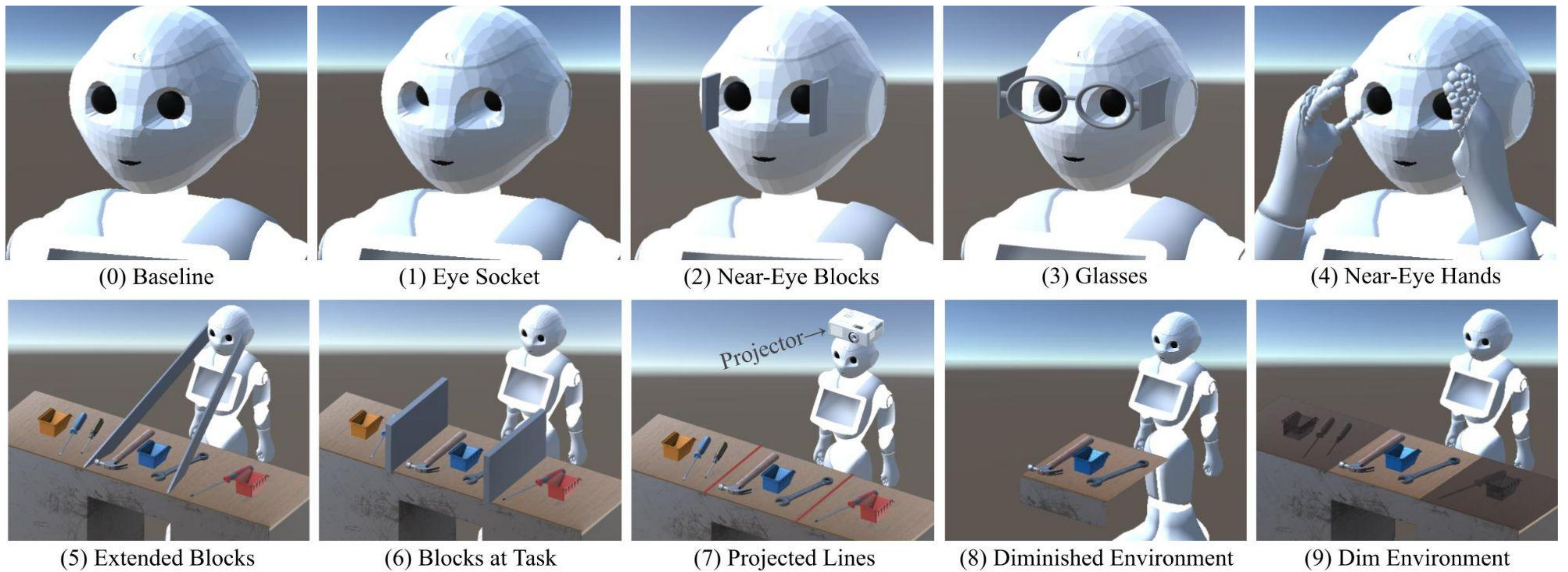


Zhao Han



UNIVERSITY OF SOUTH FLORIDA

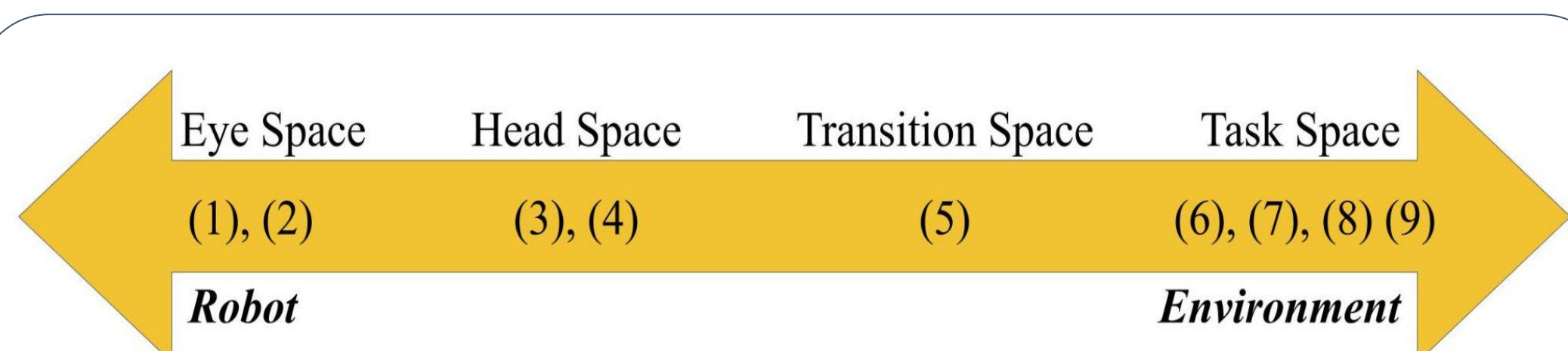
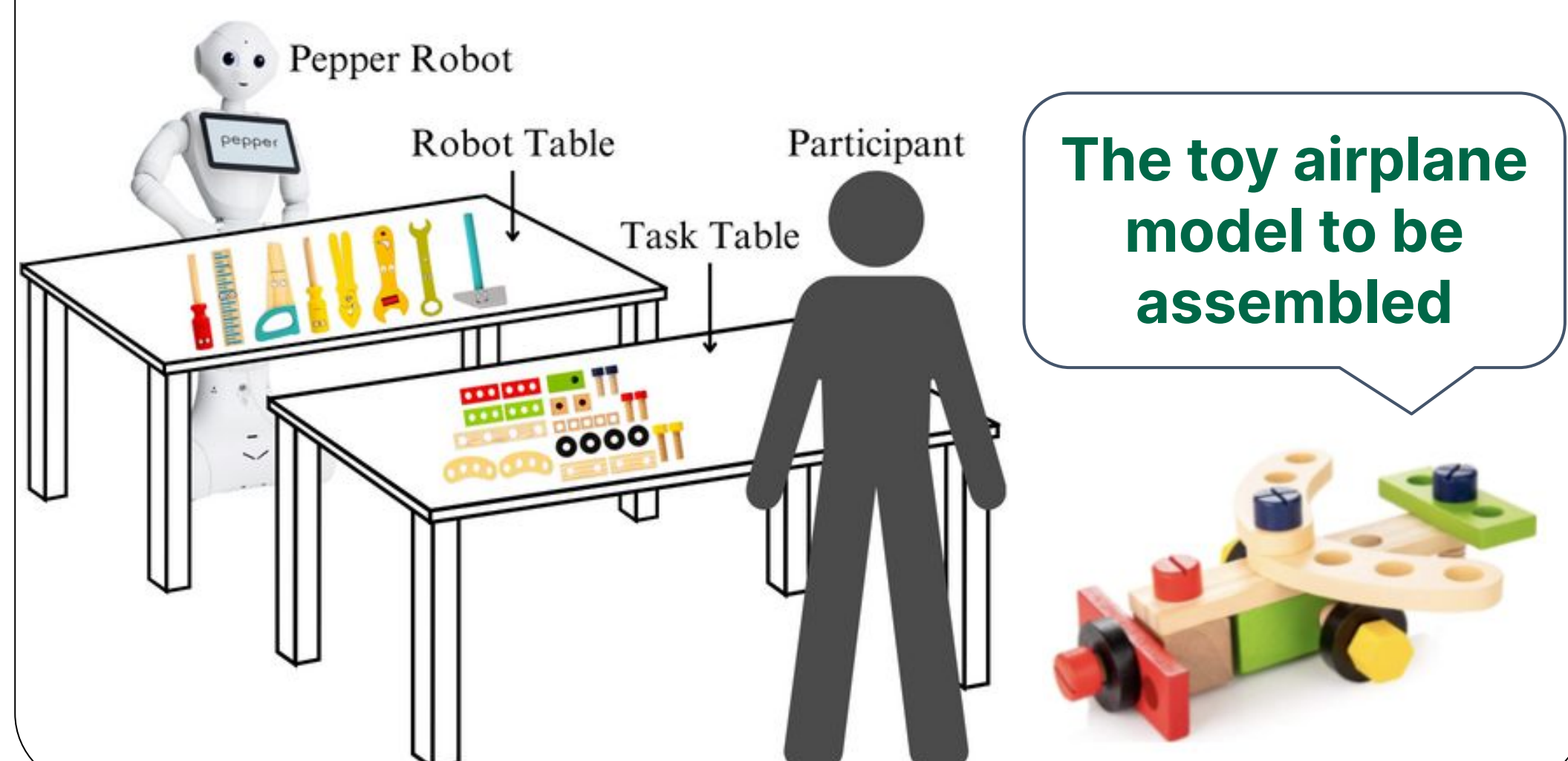
The RARE Lab, Department of Computer Science and Engineering, University of South Florida, USA



## Do you know robots have much narrower views than humans?

- **Study shows** that we can mistake a robot's field of view (~60°) the same as ours (>180°), forming an inaccurate mental model.
- This is problematic! We will ask robots to do impossible tasks about out-of-view objects!
  - It is crucial to align our mental models of robots.
- We thus designed **9 situated augmented reality (AR) indicators** to reveal its real vision capability.
  - Why AR? The robot's hardware is hard to modify. It allows fast prototyping to explore design space.

- **We believe** those closer to task space will improve subjective experiences (**confidence & cognitive effort**).
- Measured by error rate, we believe participants will also form **a more accurate mental model**.
- To test the hypotheses, we designed an within-subjects experiment.
- Participants will assemble a toy model and choose to ask the robot to deliver tools as they guess whether they are out of the robot's view.



- Beside these indicators, we proposed a **design taxonomy and spectrum** to group our designs.
- The spectrum shows a continuum from the robot to the environment space in the physical world.

## Takeaways & Next Steps

- We designed 9 indicators to reveal a robot's vision capability, aligning our wrong mental models.
- We will conduct the user study to evaluate them.

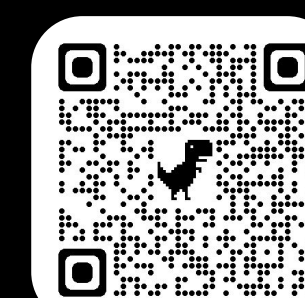
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Hong Wang

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