

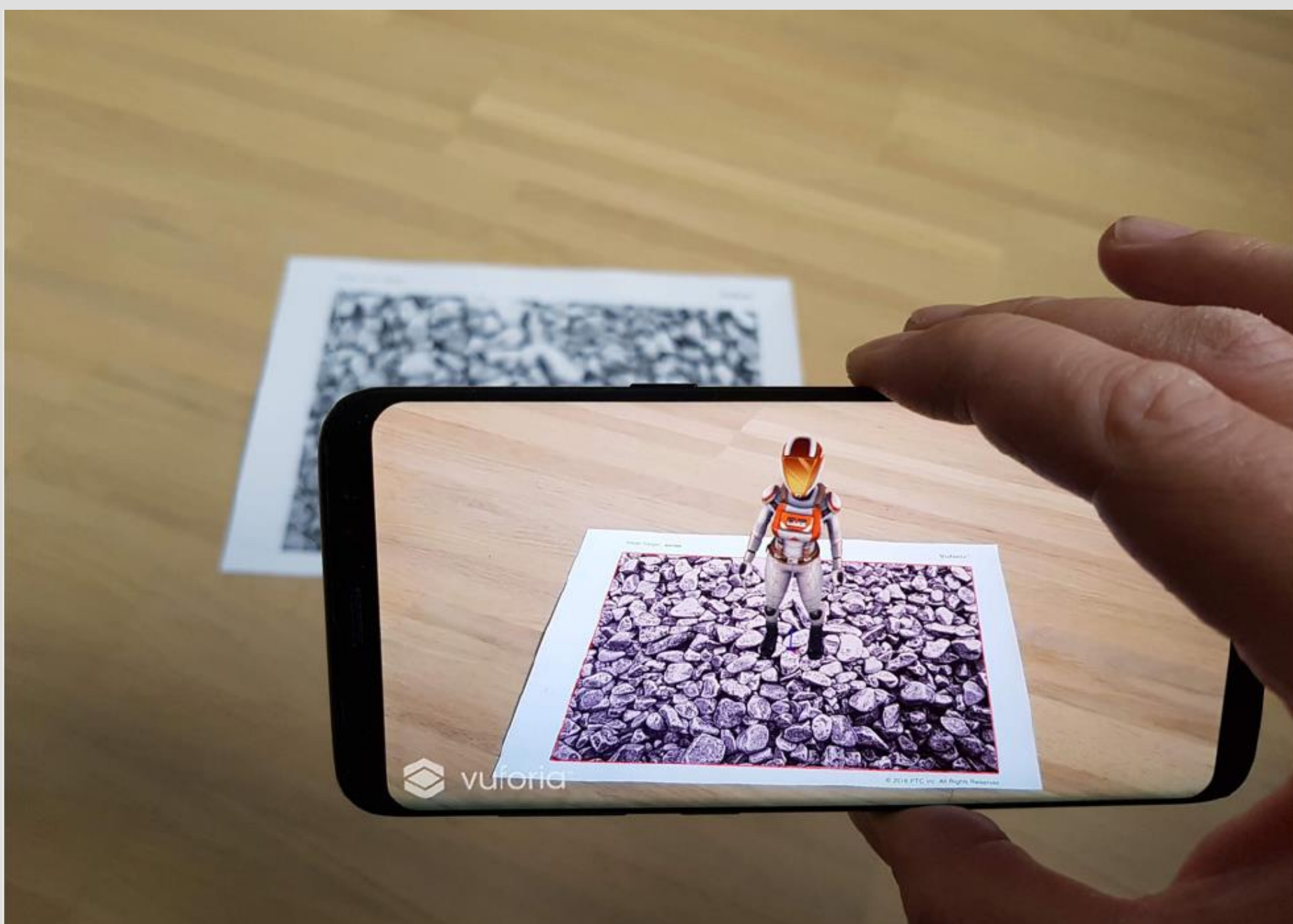
Mixed Reality in Hands-On Learning of Robotics

Xinyan Zhao (CSE), Sabrina Lam (MAE), M. Usman M. Bhutta (MAE), Darwin Lau (MAE), Jimmy Lee (CSE)

Introduction and Motivation:

Augmented Reality

- Digital information is overlaid onto the actual physical world.
- Interactions between the virtual object with the physical world.



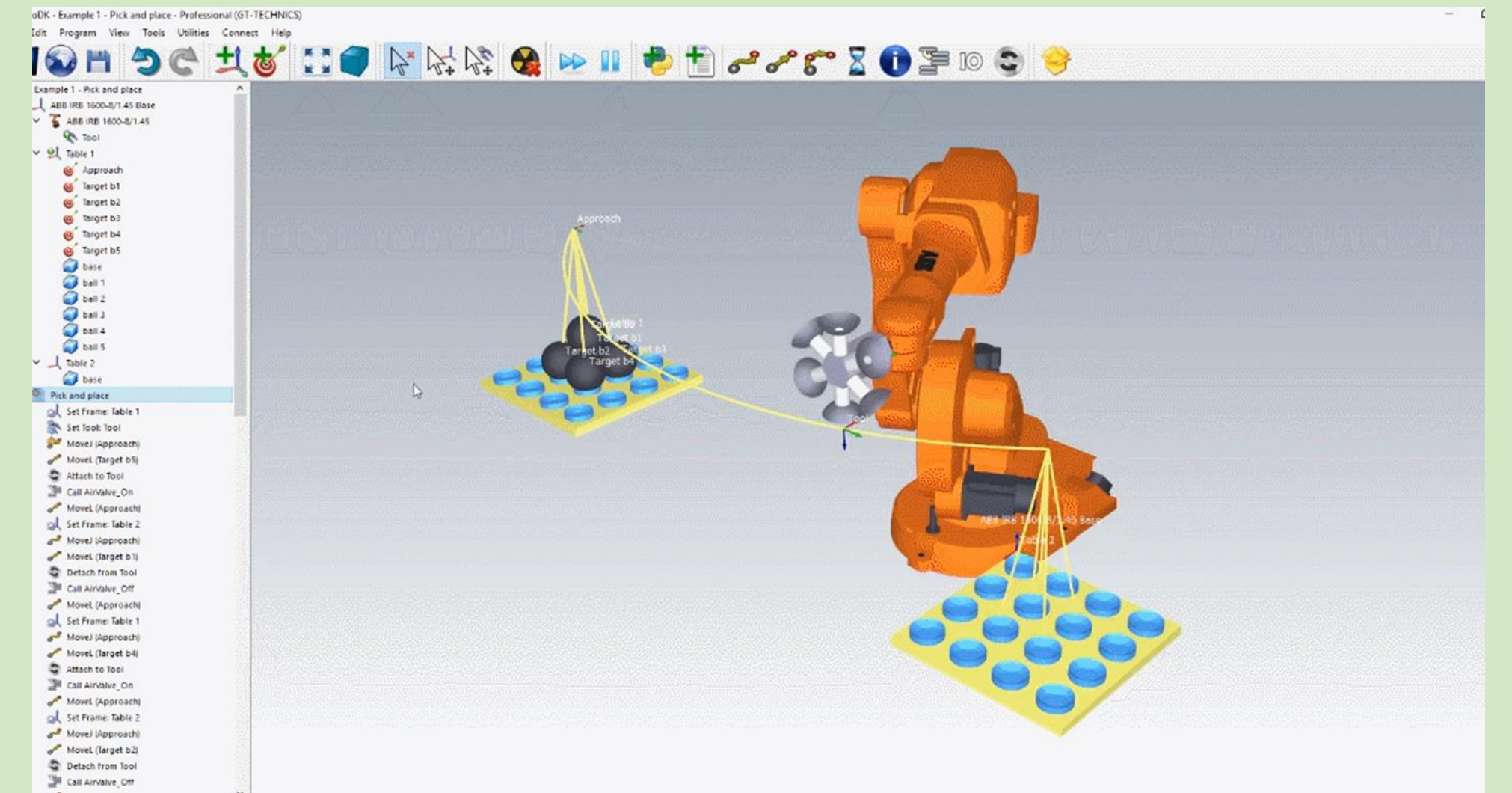
Robot Experiment



Problems: Cost too much

- Human talent.
- Time.
- Space.
- Money.

Solve Robot Experiment Problems



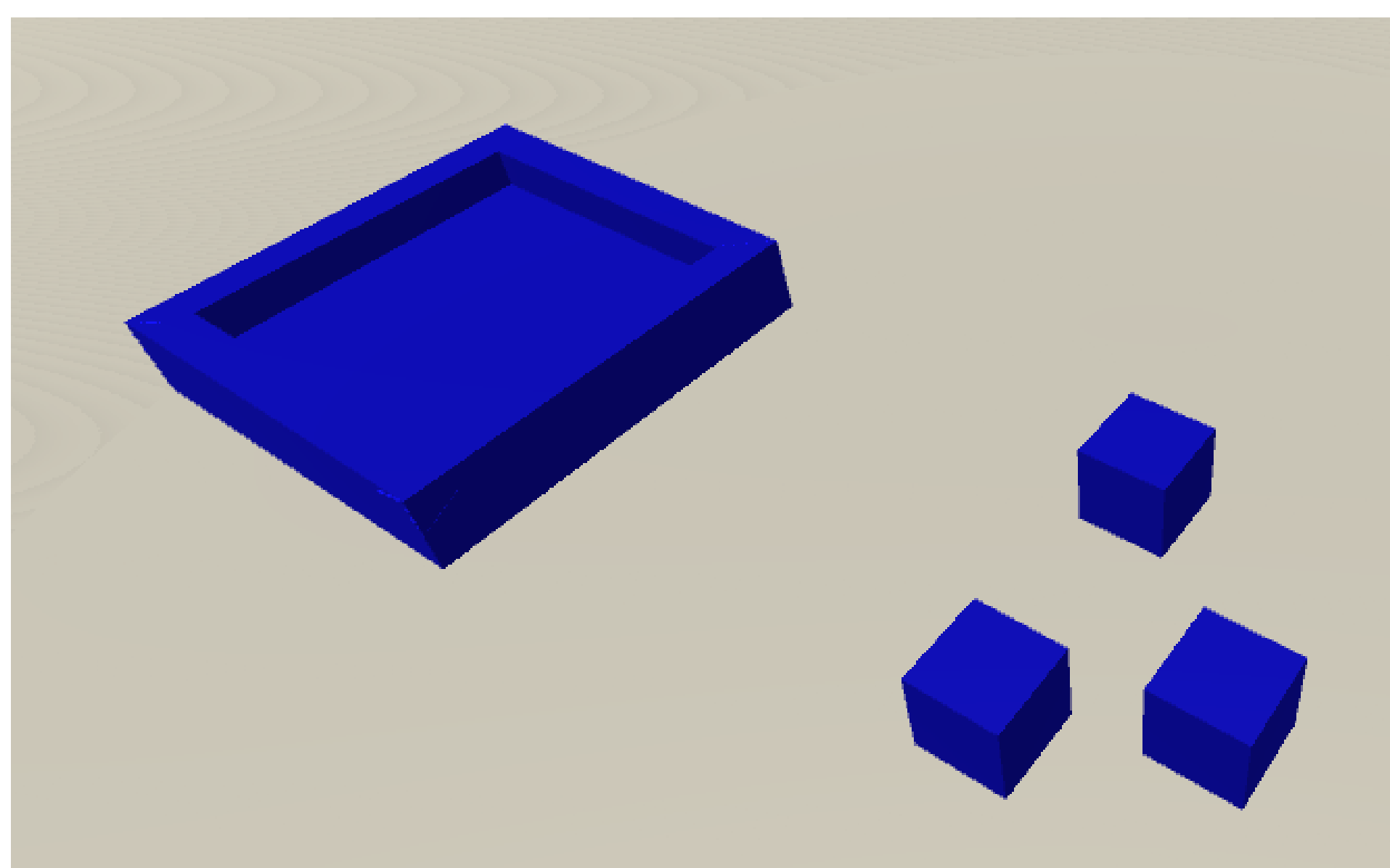
Simulation \neq Reality

- Errors.
- Frictions.
- Power.

AR with Robots:

Virtual Scenes

Virtual scenes that will be augmented onto the real world.



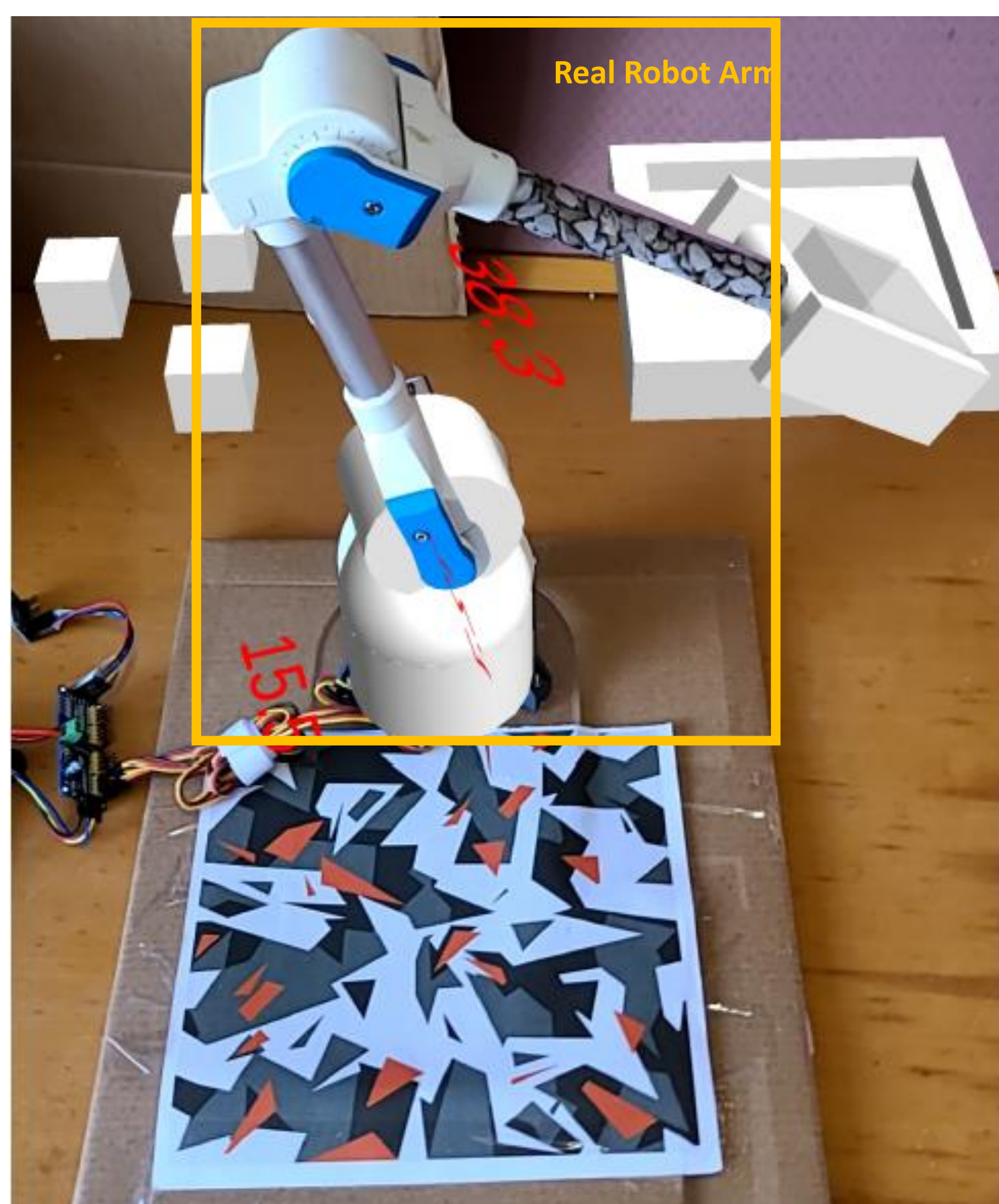
Different

Objects

In Specific Position

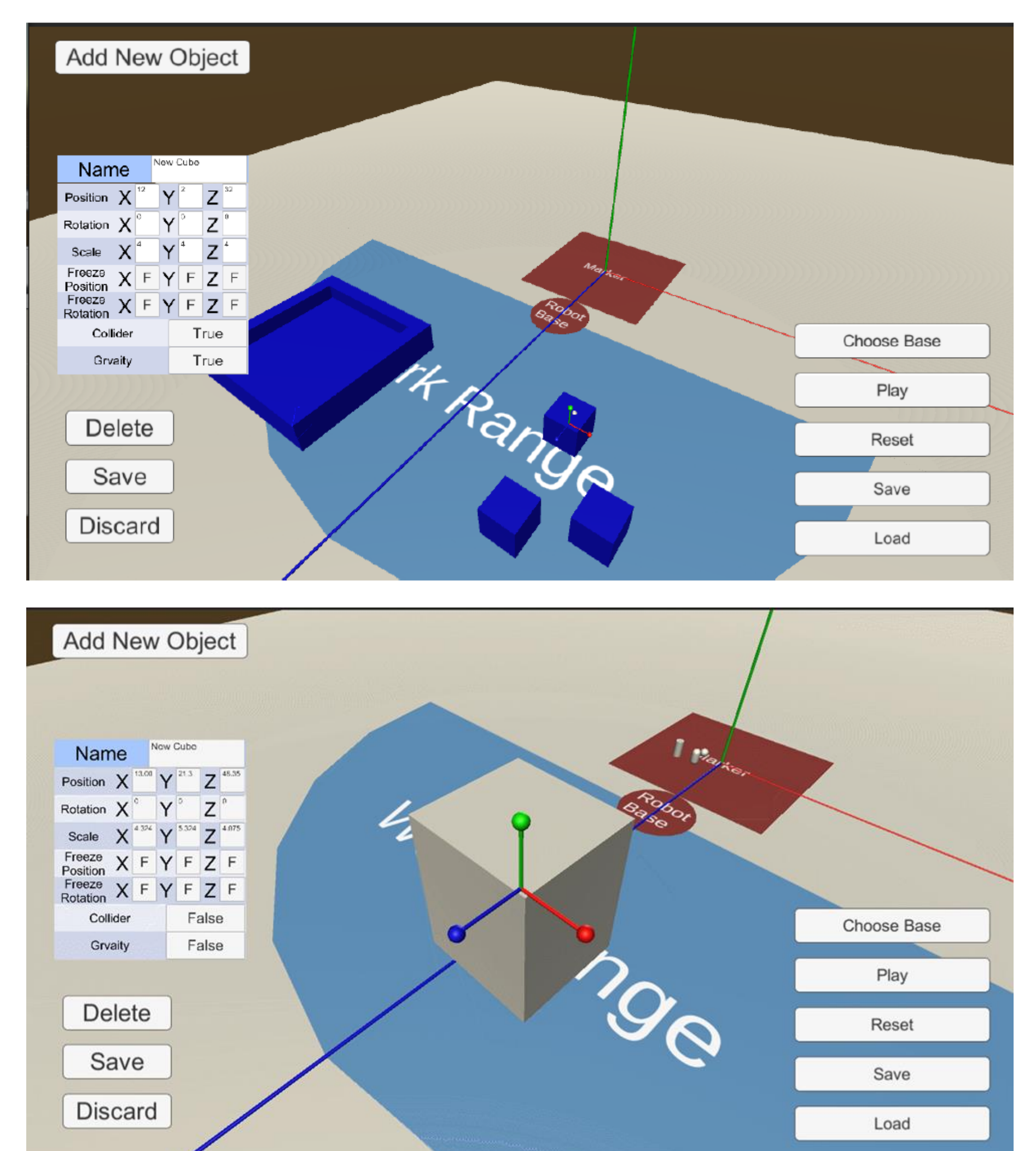
AR Player

View the augmented reality scene.



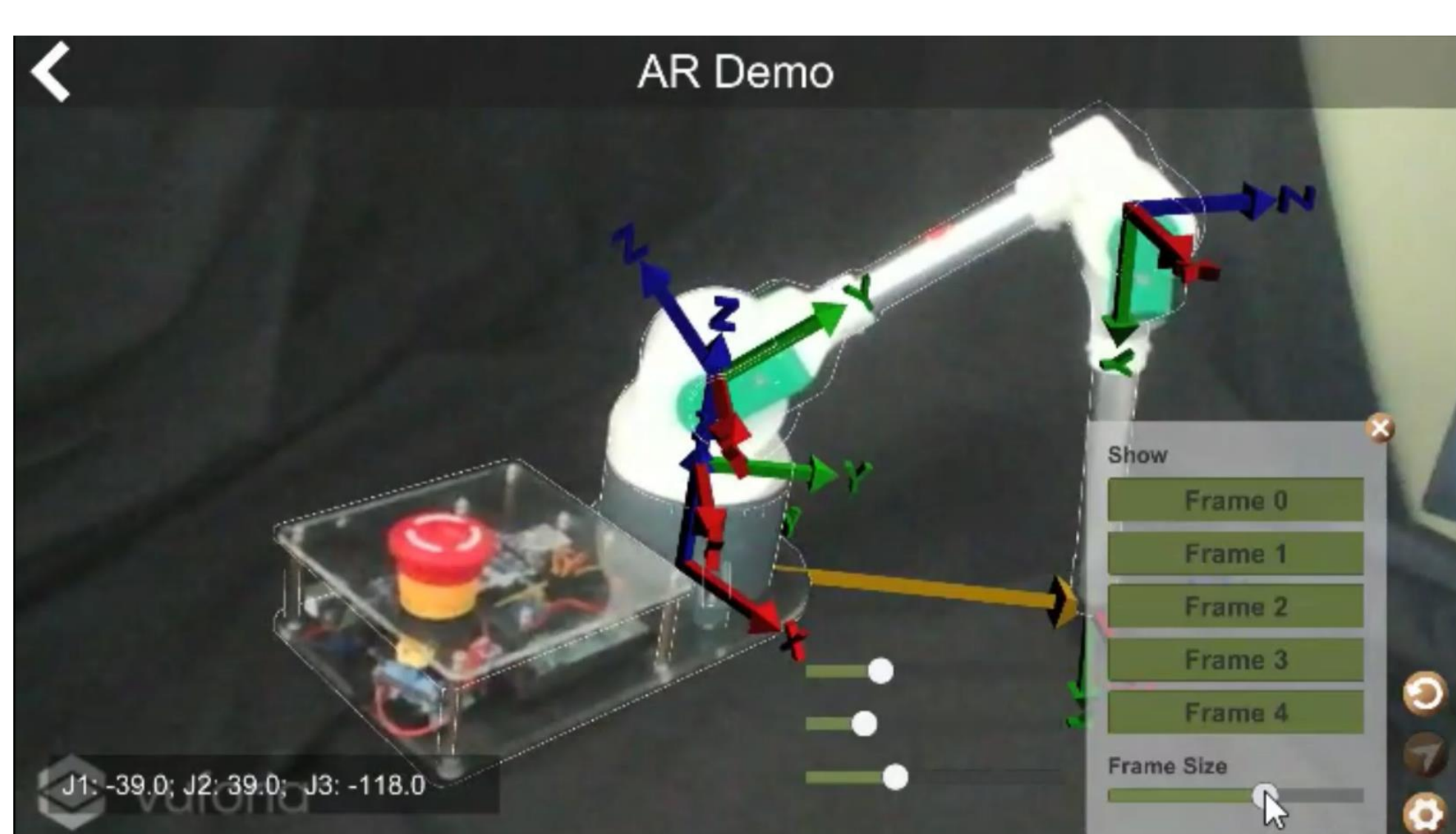
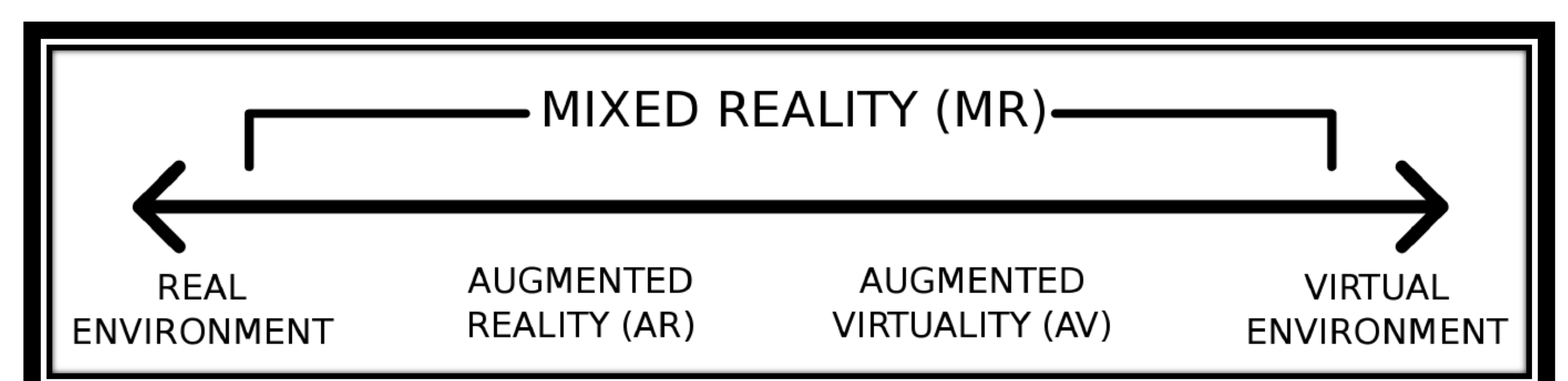
Scene Builder

Build the augmented reality scene.

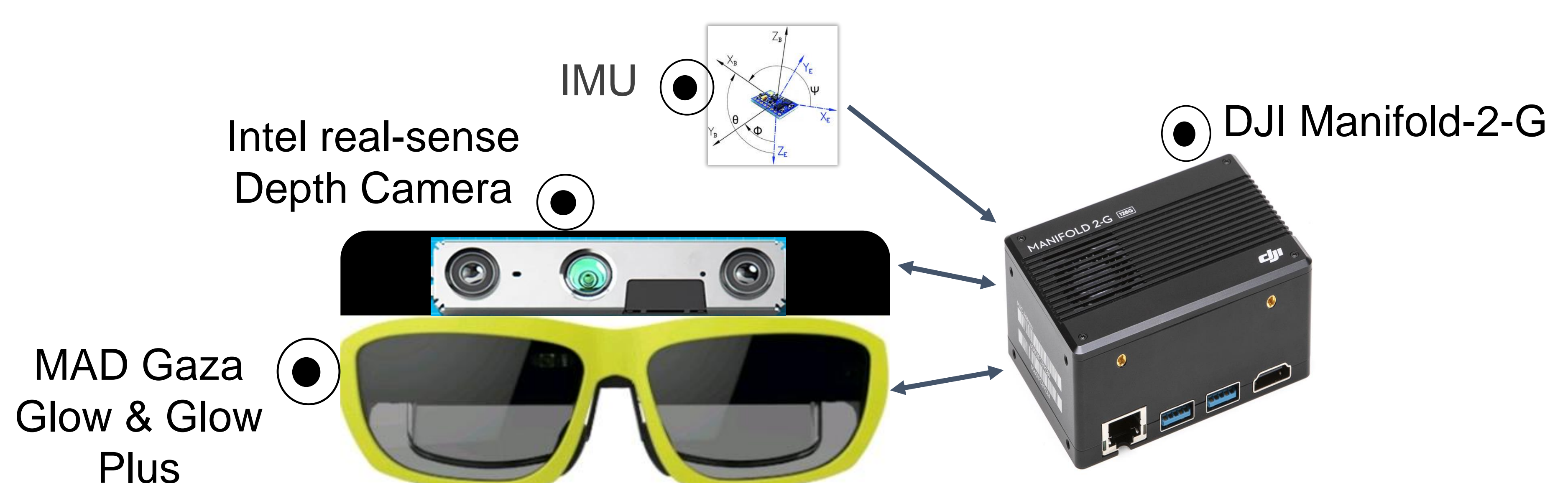


Mixed-Reality AR+VR H/W

Our latest mixed-reality H/W setup for several on going projects such as robot-human interaction, teleoperated visits, advance and interactive mixed reality robotics labs.



AR Utilization for robotic poses demonstration



Mixed-Reality H/W Setup