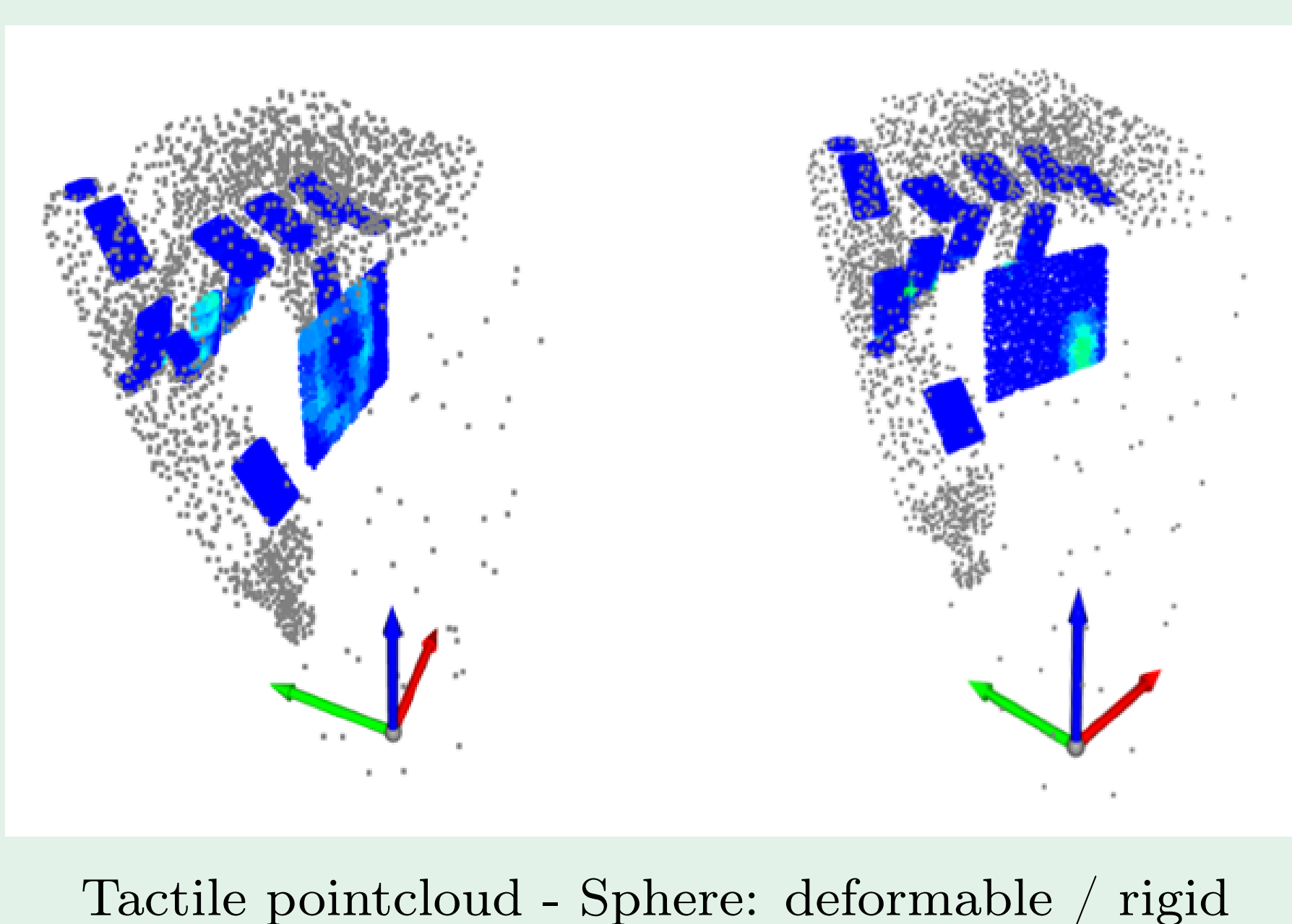
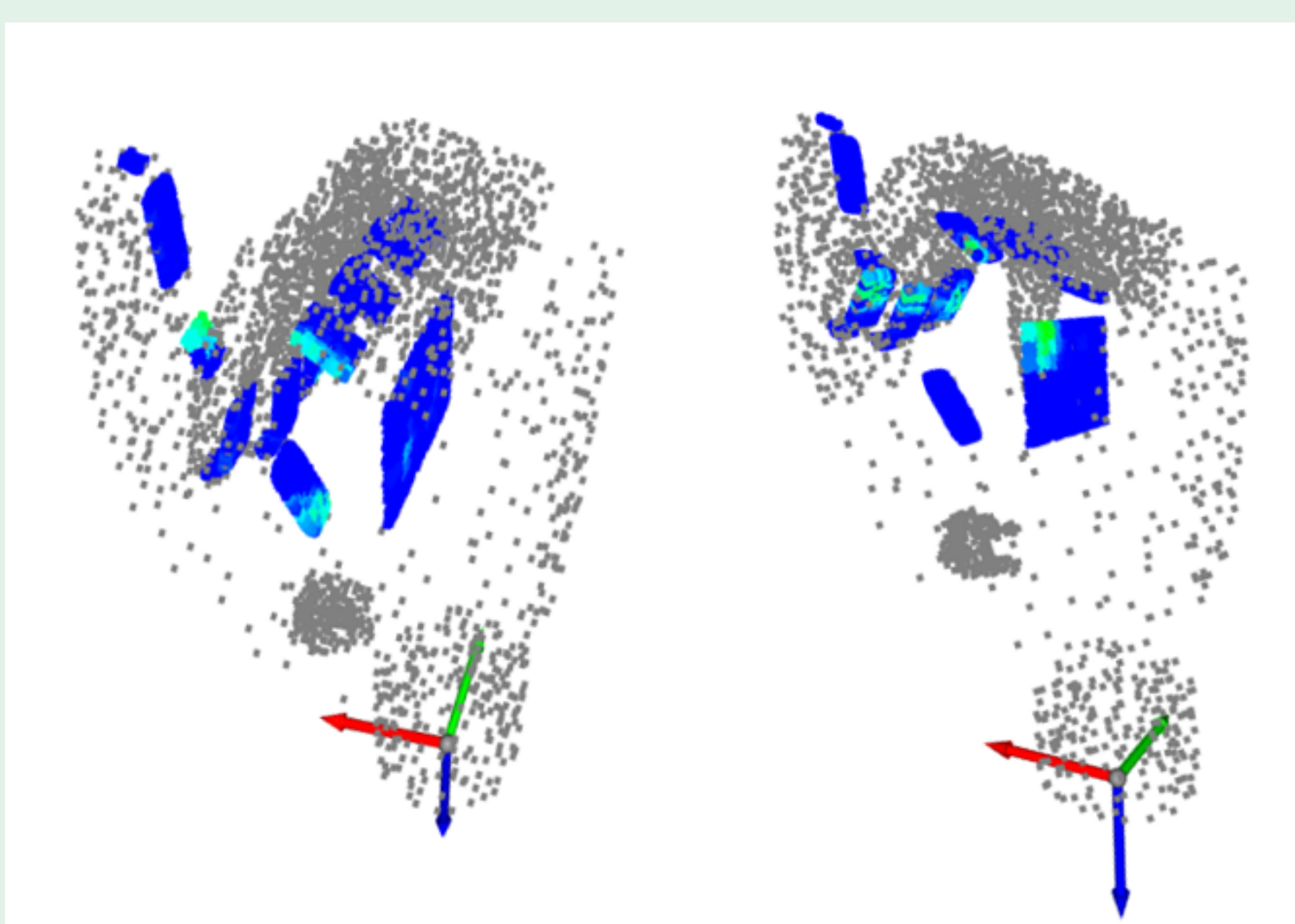
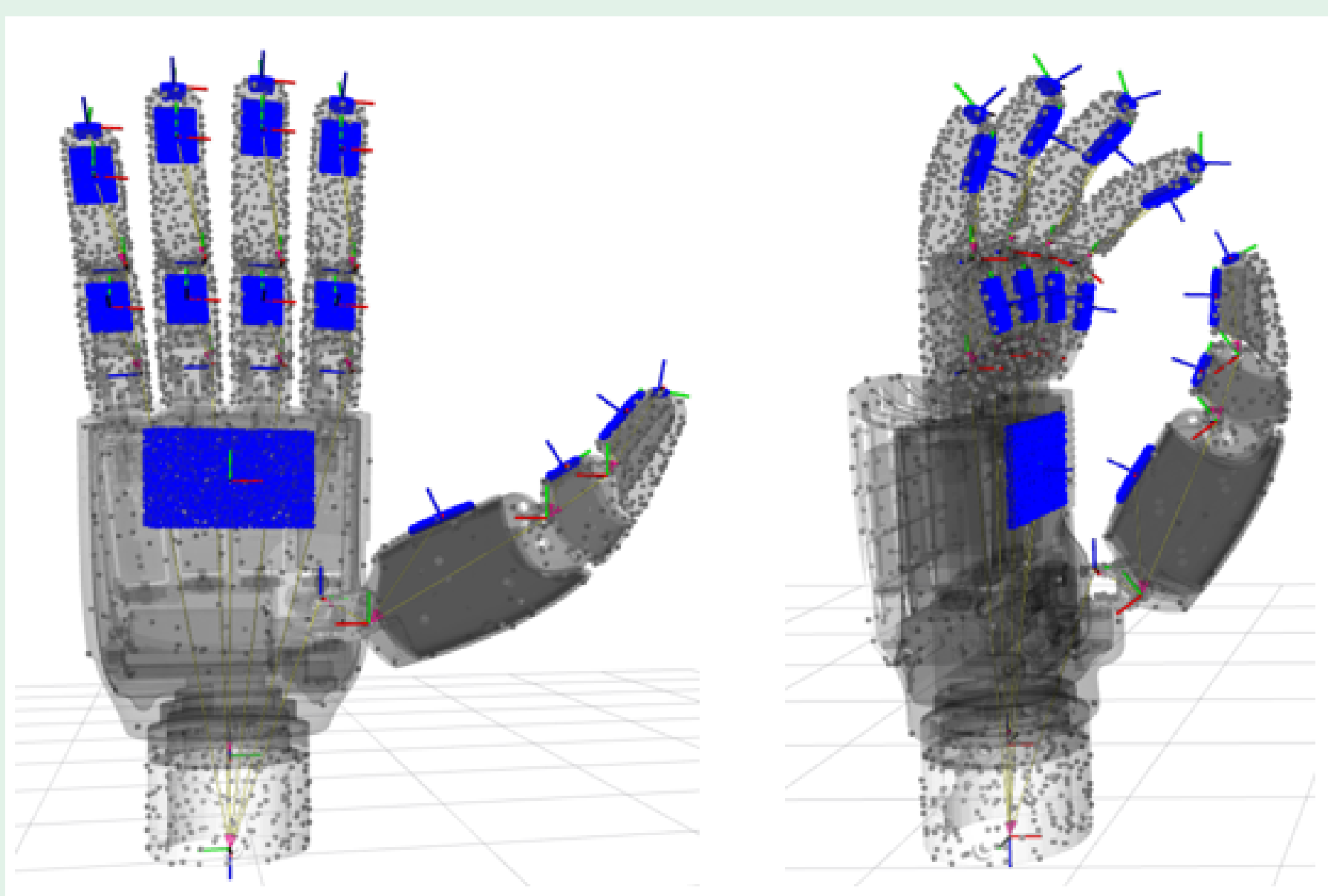


## Background

- Multi-Modal Visual and Tactile Sensing
- 3D Deformable Surface Reconstruction
- Object Grasping
- Geometric Prior Estimation
- ROS Support. Hand Model& Kinematics
- Real 6-DOF Robotic Hand
- Sim2Real

## 3D Tactile Point Cloud

- Deformable objects
- Non-deformable objects
- Sphere and cylinder

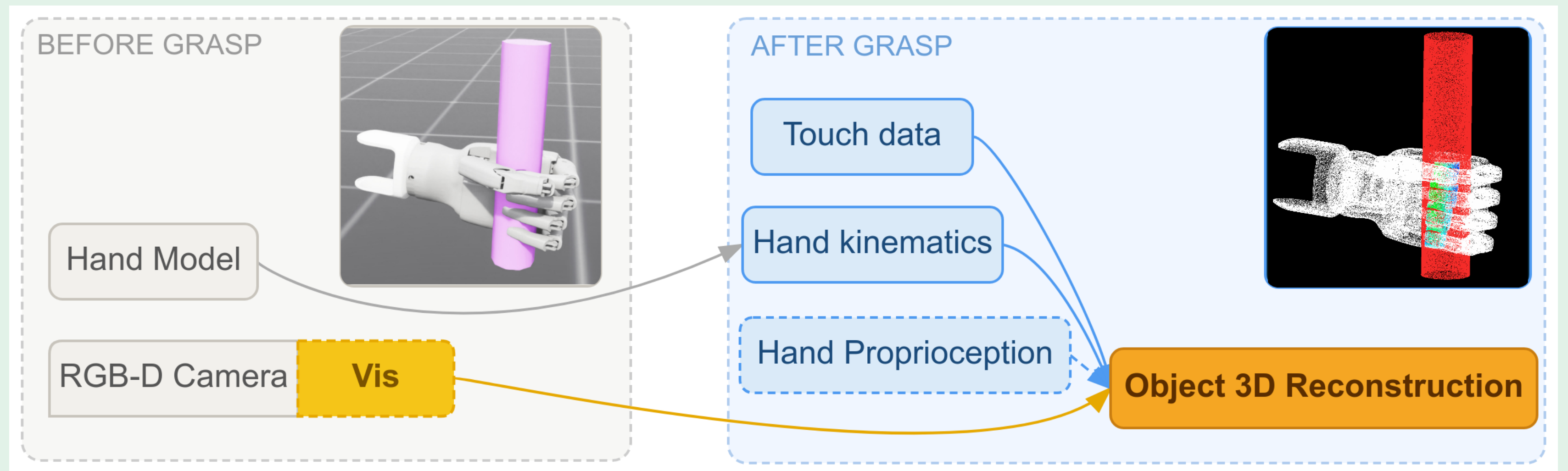


## Acknowledgements

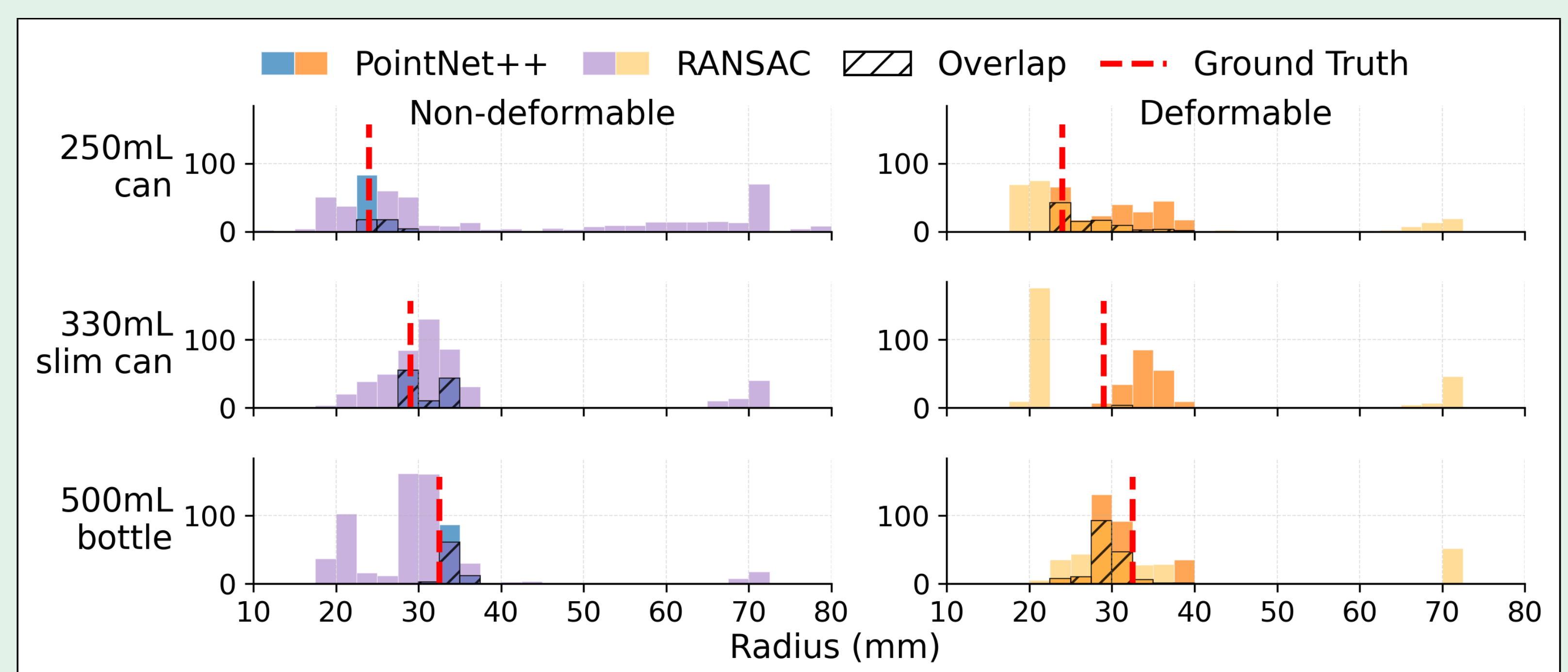


UCRA 2026 ViTac Workshop, Vienna, Austria, 1 June 2026. Research supported by Analog Devices Inc. Romania and by the Romanian National Authority for Scientific Research, project nr. PN-IV-P7-7.1-PTE-2024-0105.

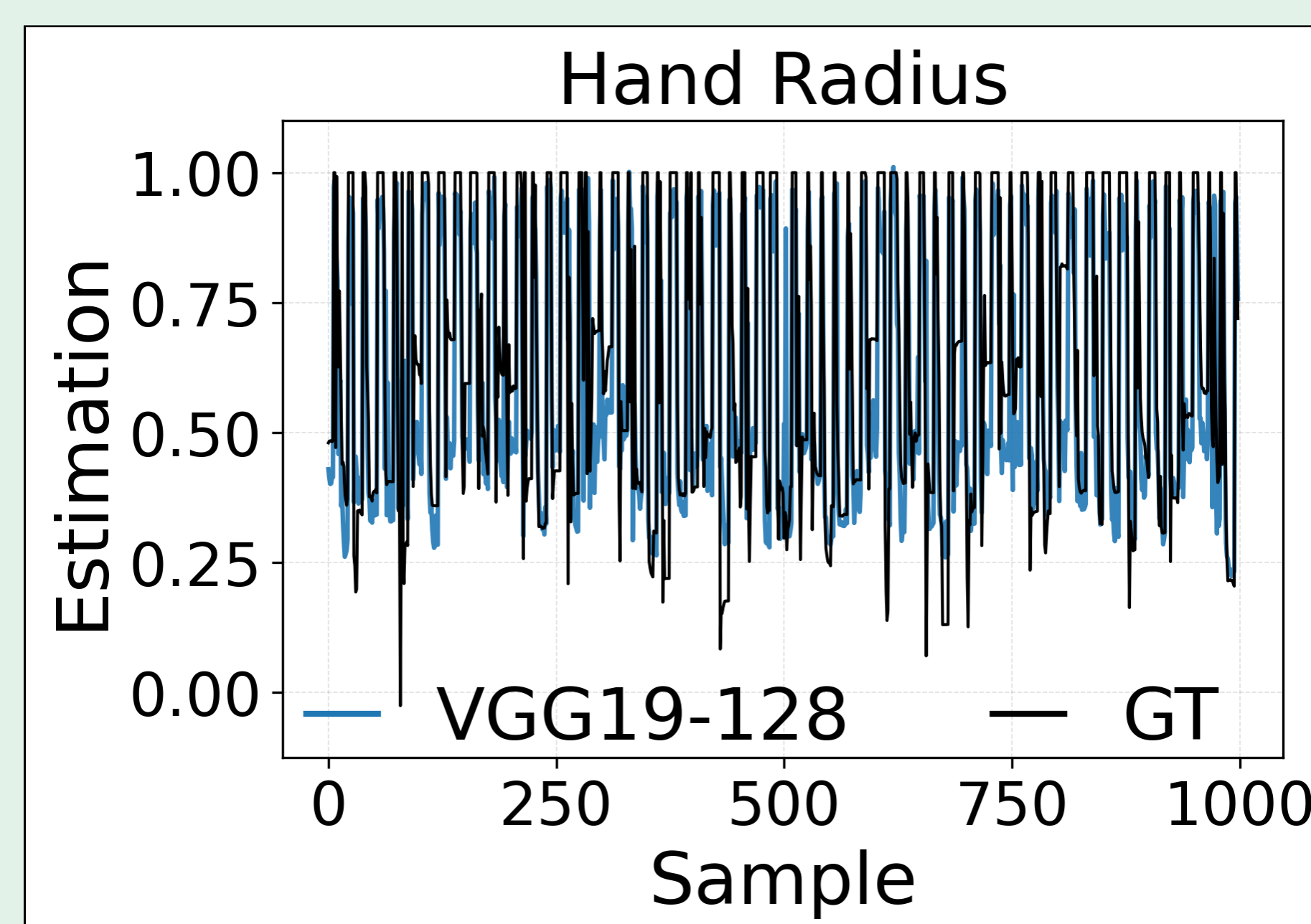
## Proposed Architecture



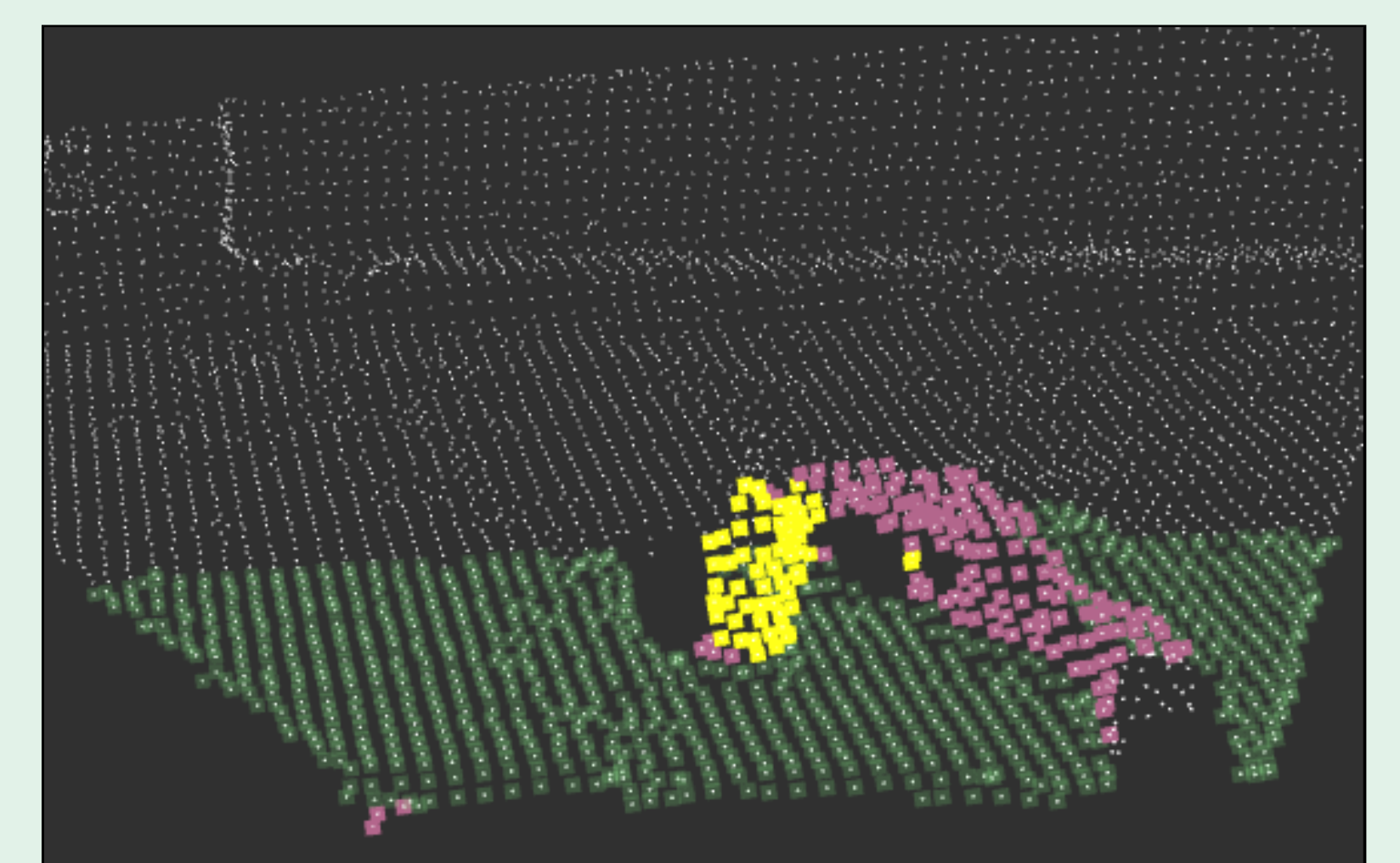
## Results



Radius estimation comparison. Cylinders of 24mm, 29mm and 32.5mm radius



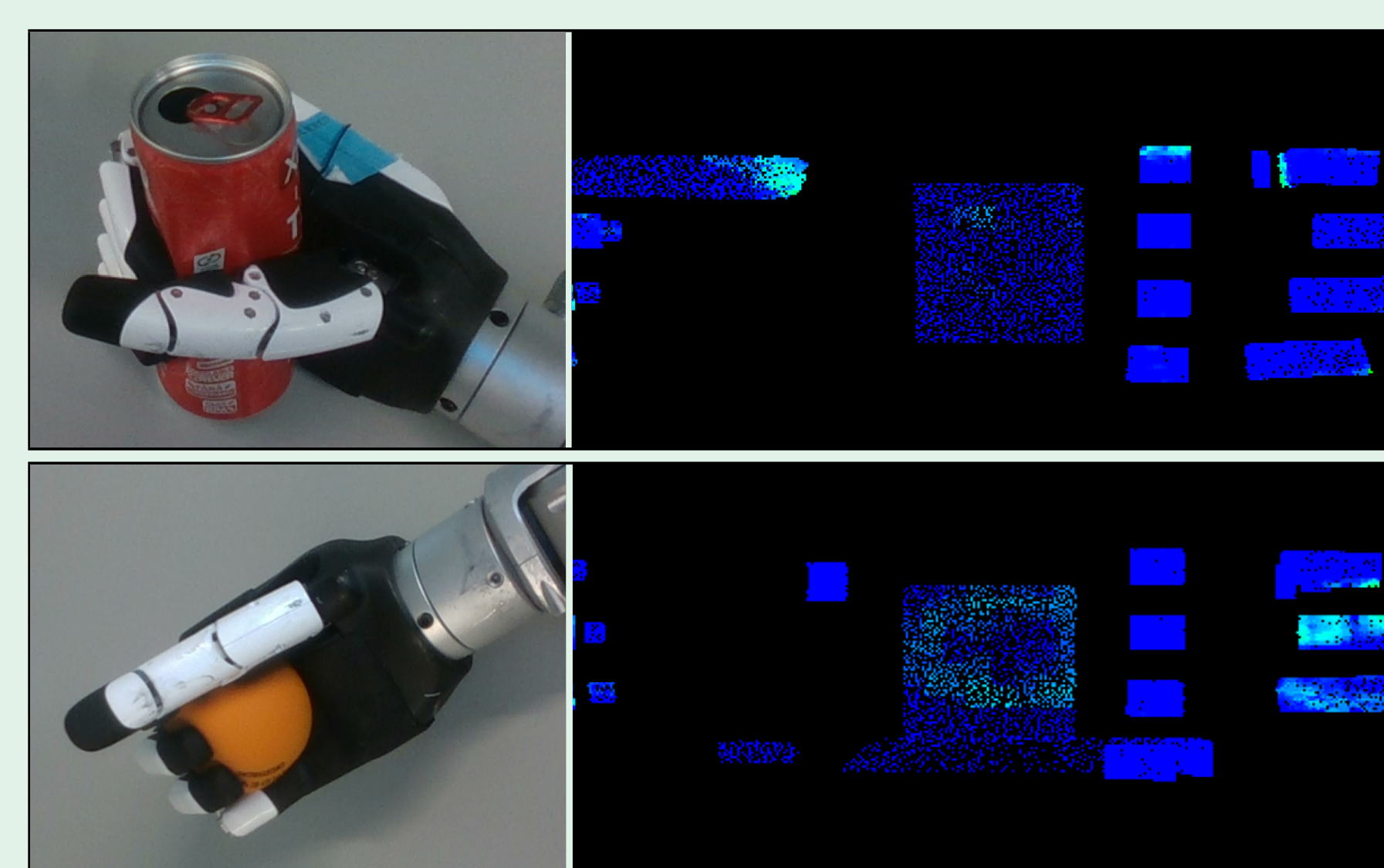
VGG radii estimate from RGB tactile data



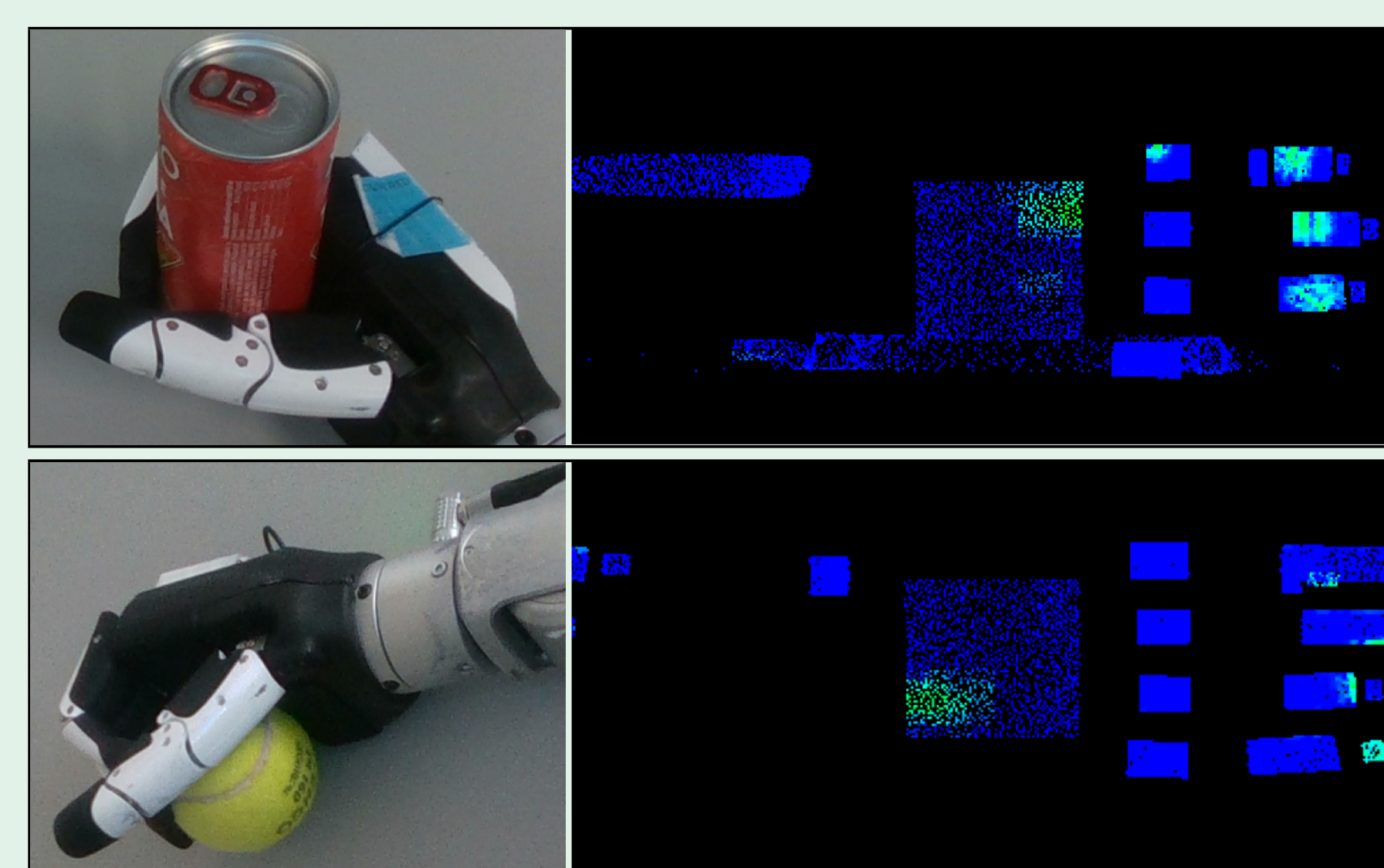
RGB-D scene parsing (yellow cylinder, magenta hand)

## Tactile Heatmaps

RGB views with tactile heatmaps cylinder projections for deformable and rigid objects.



Deformable cylinder/ball



Rigid cylinder/ball

## References

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- [4] *Isaac Lab DeformableObject: Finite-element deformable assets (source documentation)*. [https://docs.robotsfan.com/isaacsim\\_official/v2.3.1/\\_modules/isaacsim/assets/deformable\\_object/deformable\\_object.html](https://docs.robotsfan.com/isaacsim_official/v2.3.1/_modules/isaacsim/assets/deformable_object/deformable_object.html)
- [5] *Isaac Sim Physics Fundamentals: Compliant contacts as spring-damper contact to approximate deformables with rigid bodies*. [https://docs.isaacsim.omniverse.nvidia.com/4.2.0/simulation\\_fundamentals.html](https://docs.isaacsim.omniverse.nvidia.com/4.2.0/simulation_fundamentals.html)

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