

# ConceptGraphs: Open-vocabulary 3D Scene Graphs for Perception and Planning

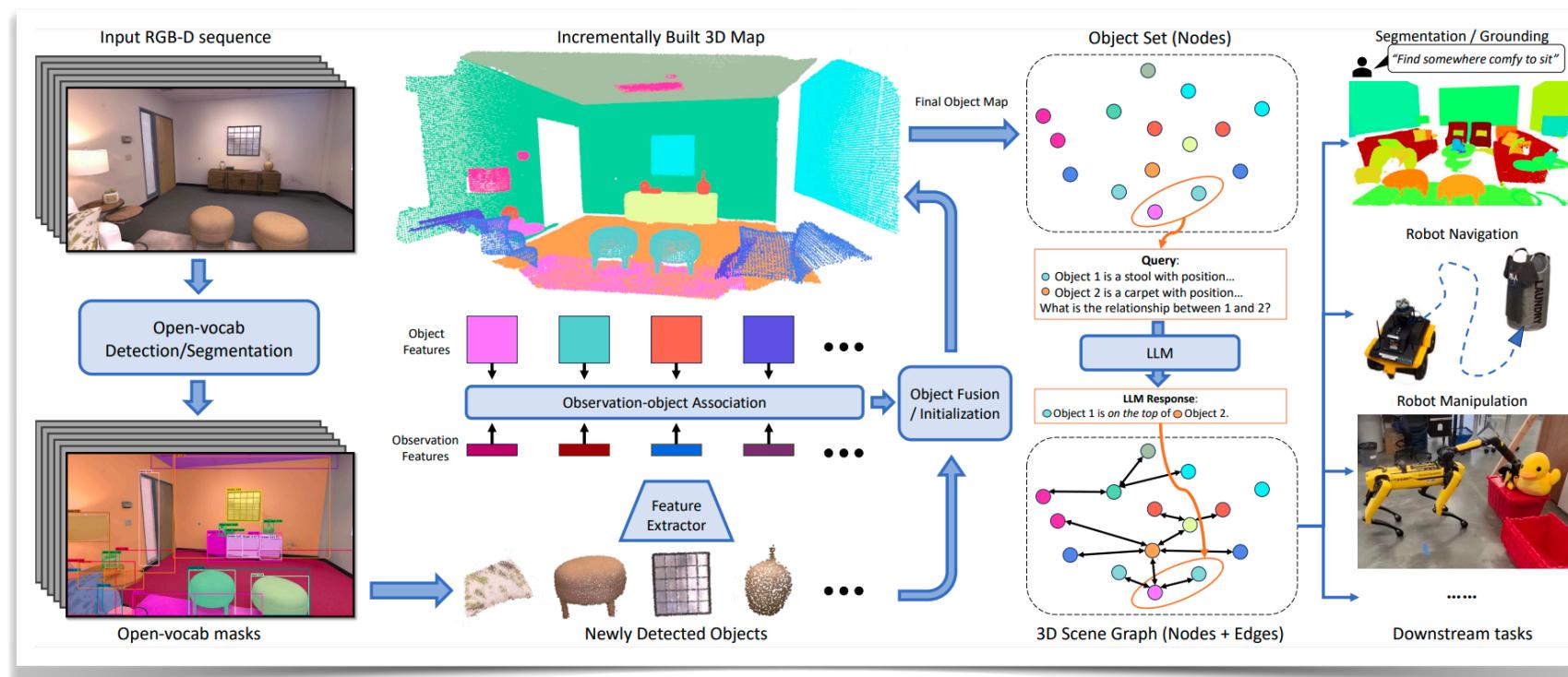
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<https://concept-graphs.github.io>

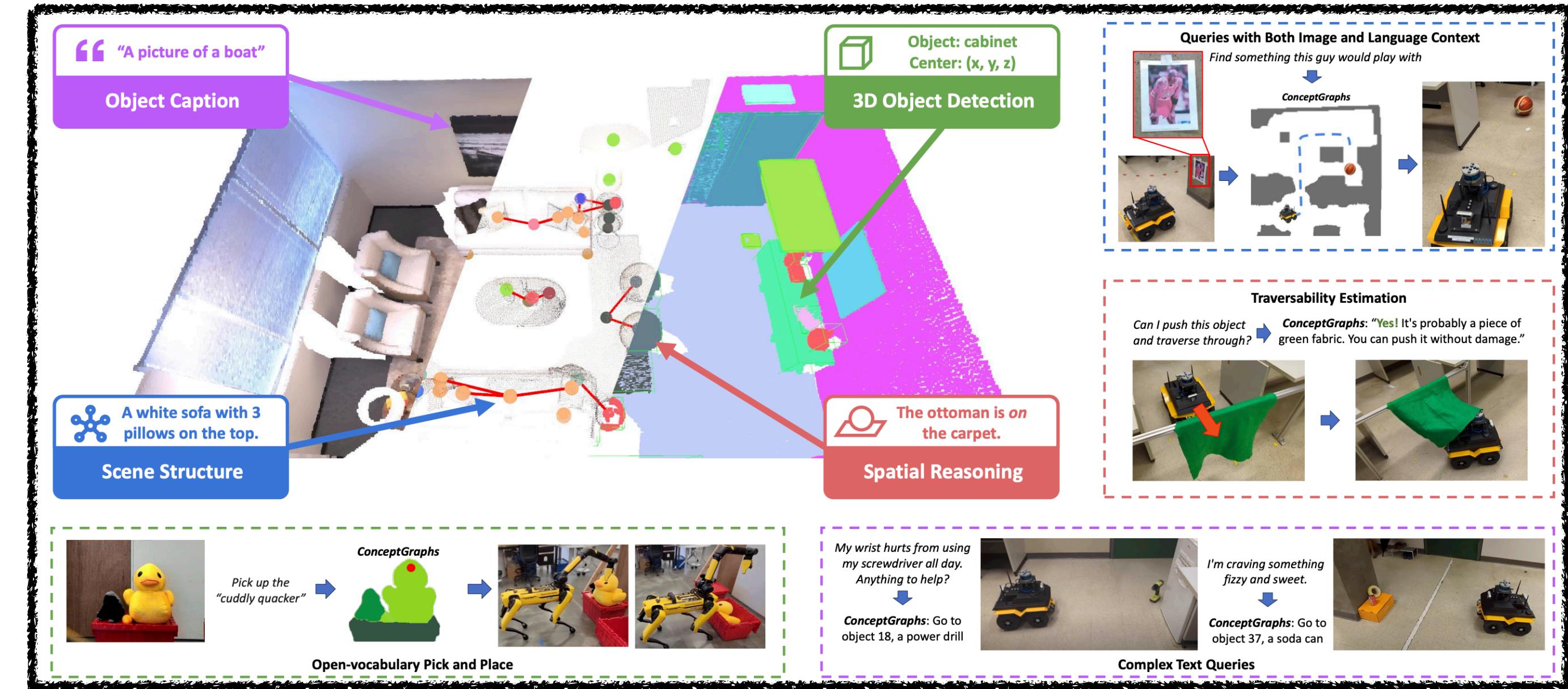


## What are ConceptGraphs?

- ▶ **Object-centric 3D scene graphs** integrating geometry from 3D mapping and semantics from foundation models
- ▶ **Open-vocabulary semantic descriptors** for perception and planning
- ▶ Deployed on **real-world navigation and manipulation** tasks



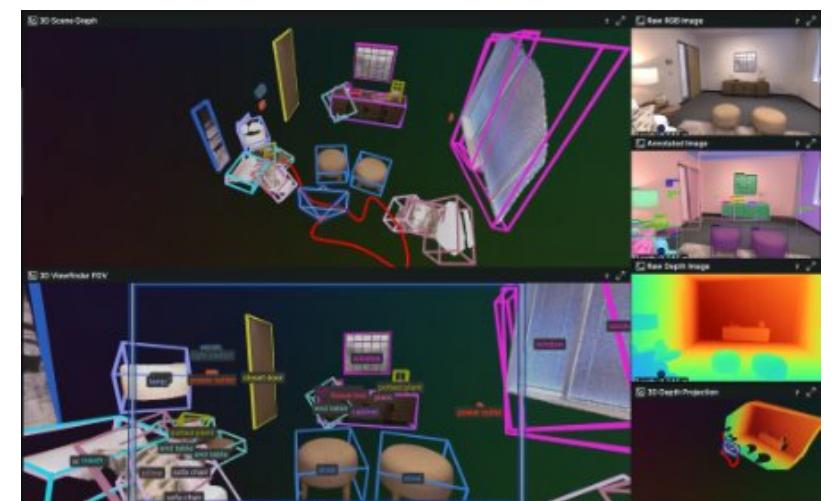
- **Nodes** represent objects in the scene. Objects are **open-vocabulary**; they do not need to be known a priori
- **Edges** encode inter-object relationships, which are open-vocabulary and easily customizable via a text prompt
- 3D scene graphs are parsed into a text format and interfaced with large language models (LLMs) for task planning



## Open-source code



- **Real-time interactive visualization** of scene-graph construction
- **iPhone support** as RGB-D sensor
- **Documentation**: detailed README and tutorials



MURI Topic #20: Self-learning for Real-world Perception

