Data Collection with Mobile Manipulators for Learning from Demonstration

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Introduction:

Manipulation and Navigation capabilities of mobile robots with objects have been proven from a hardware standpoint.



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Collecting large scale data for **robot learning** to build intelligent systems is **challenging**.
Using **Spot**'s existing hardware capabilities and primitive behaviors, we develop a method to perform **robust data collection** to facilitate robot learning from task demonstrations - such as "putting chair next to a table".

Model Information:

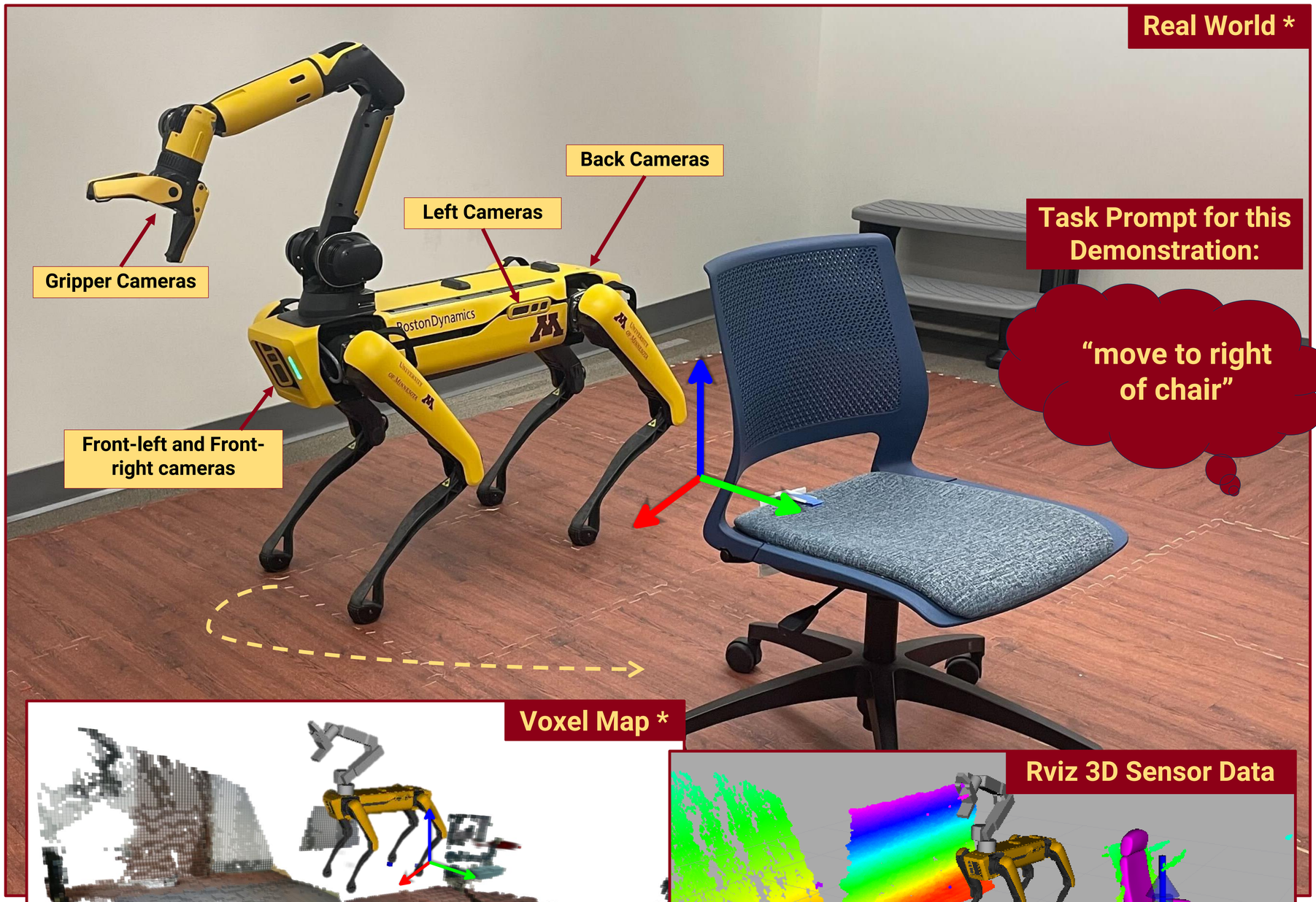
Collected demos fed into a variation of a Vision-Language Model, Per-Act [2] – creates 3D, colored blocks called **voxels** to train. Weights produced for the task "move to right of chair" are then evaluated with **evaluation script**.

Dataset Information:

≈25 demos currently used to train model, all randomly placed chair positions. Data recordings (ROSBags) include **color and depth image data, task state info, transforms** relating different components of Spot.

References:

[1] *Boston Dynamics,* https://bostondynamics.com/
[2] *Shridhar, Mohit, Lucas Manuelli, and Dieter Fox*. "Perceiver-actor: A multi-task transformer for robotic manipulation." In Conference on Robot Learning, pp. 785-799. PMLR, 2023



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