

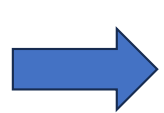
SACSoN: Scalable Autonomous Control for Social Navigation

N. Hirose^{1,2}, D. Shah¹, A. Sridhar¹, and S. Levine¹





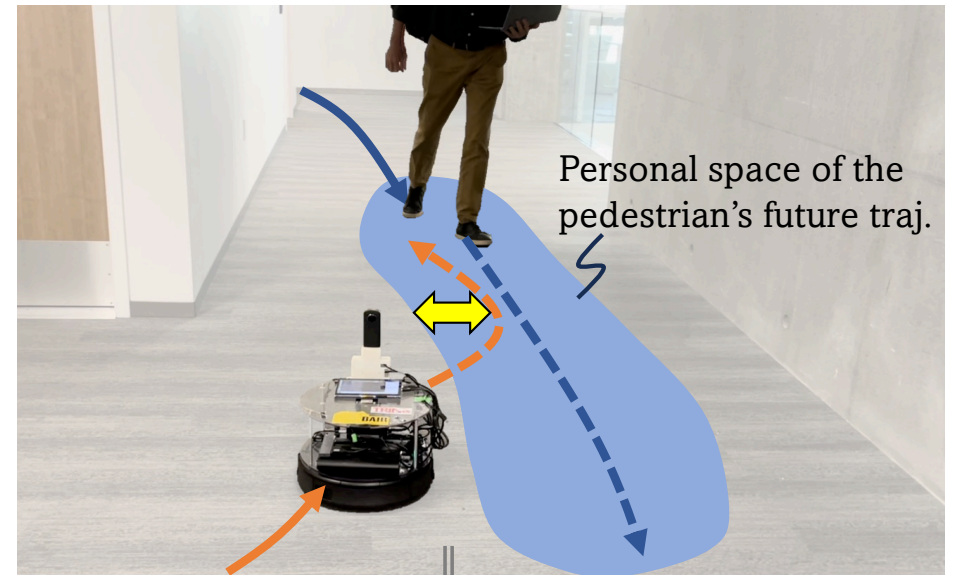
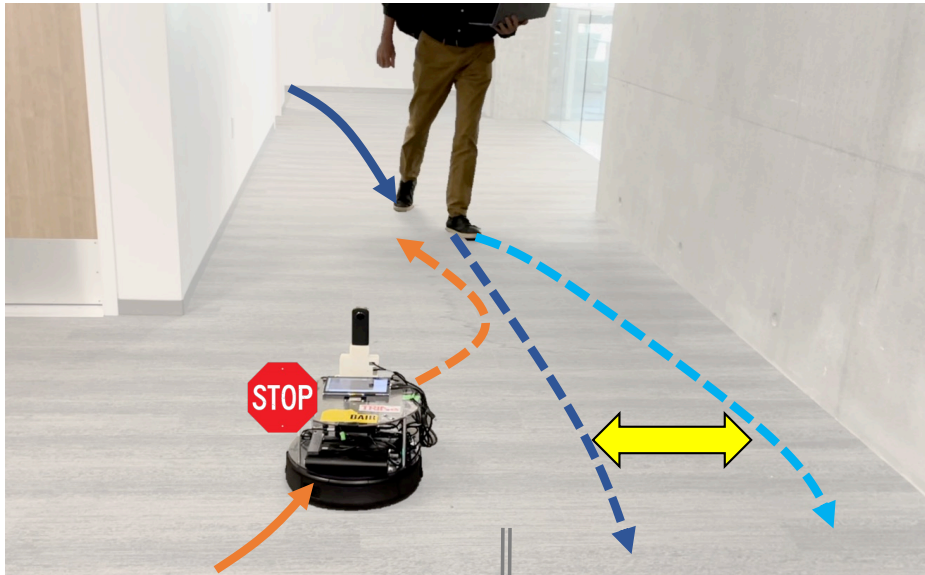
Our goal: learning socially unobtrusive behavior in **vision-based navigation**



Novel objectives to suppress the counterfactual perturbation

Scalable system to collect an enriched human-robot interaction dataset

SACSoN policy

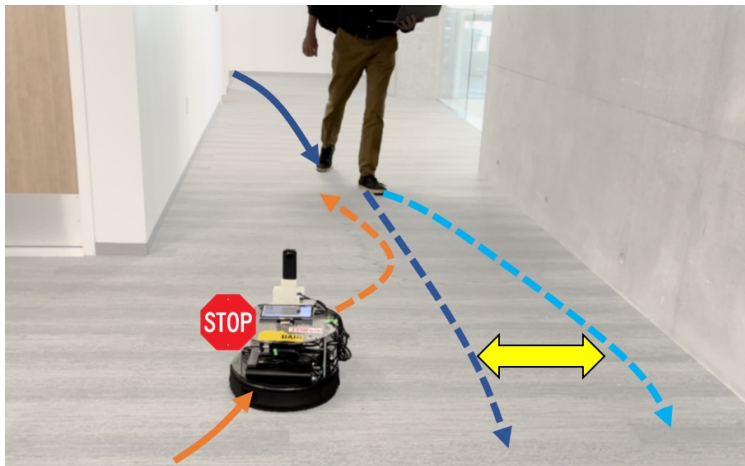


$$\min_{\theta} J(\theta) := J_{\text{nav}}(\theta) + J_{\text{cp}}(\theta) + J_{\text{ps}}(\theta)$$

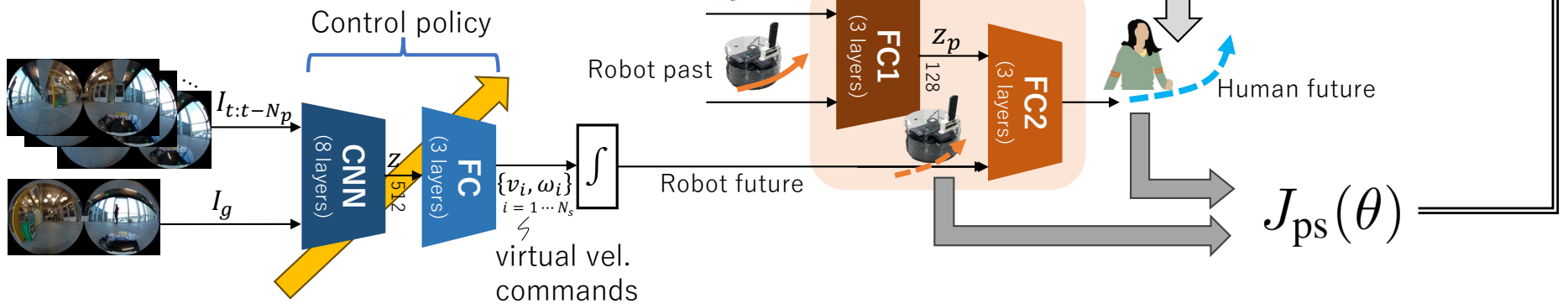
➡ Training SACSoN policy π_{θ} for vision-based navigation

* N. Hirose et al., "ExAug: Robot-Conditioned Navigation Policies via Geometric Experience Augmentation," in ICRA, 2023

Learning method

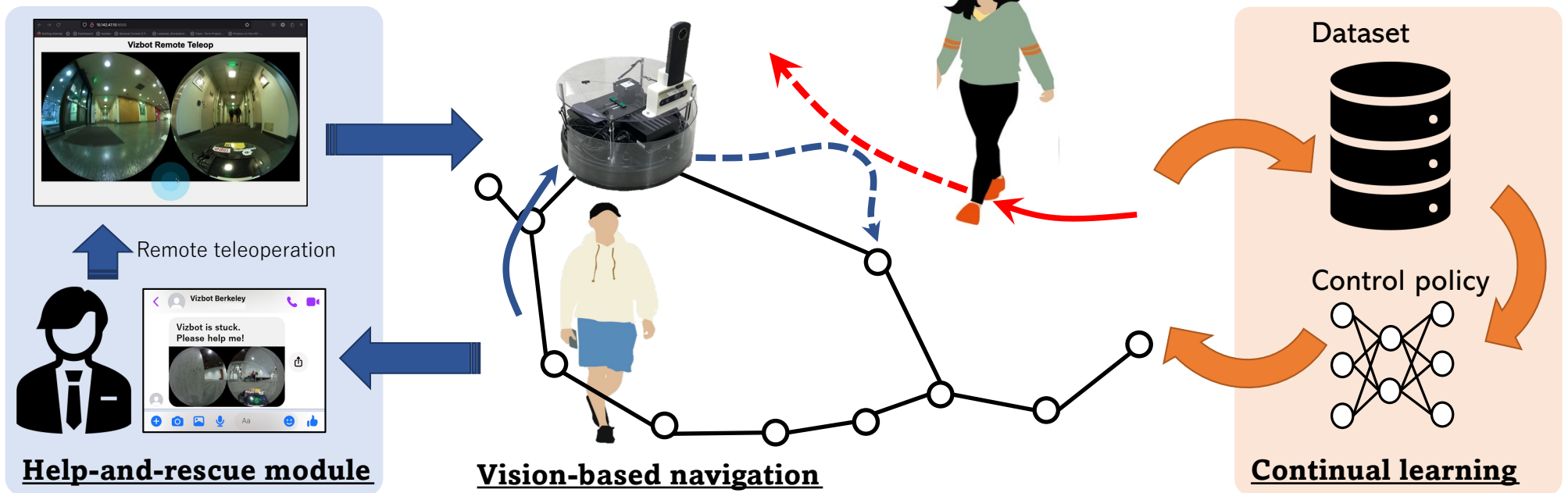


$$\min_{\theta} J(\theta) := J_{\text{nav}}(\theta) + J_{\text{cp}}(\theta) + J_{\text{ps}}(\theta)$$



HuRoN system for “data collection”

HuRoN: **H**uman **R**obot Interaction data collection for vision-based **N**avigation





HuRoN Dataset:

75 hours, **58.7** km,
4000 human-robot interactions,
5 different environments

generated traj.



Goal



1) SACSoN policy (Ours)

front side



back side



SPEED x 1

Thank you!!



Our website : <https://sites.google.com/view/SACSoN-review>