

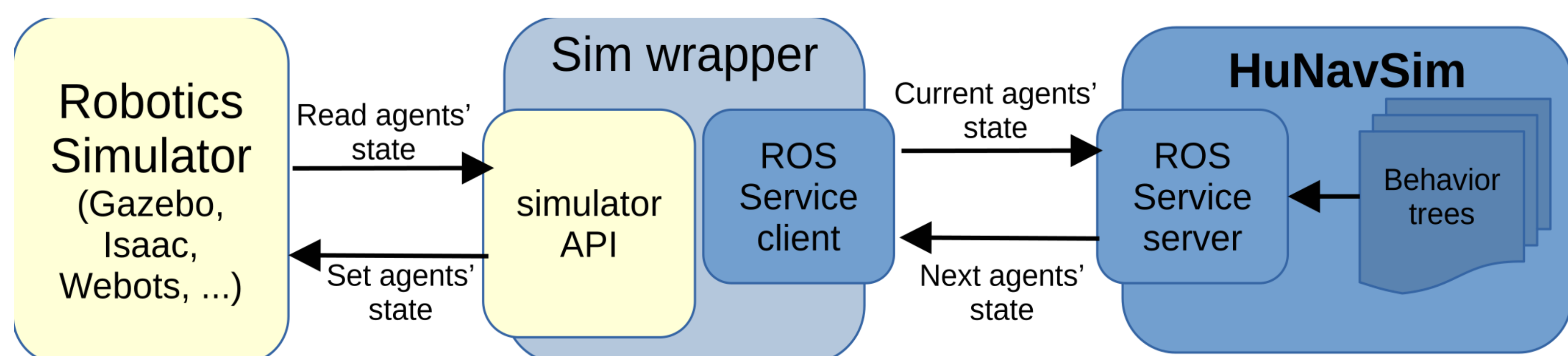
An Enhanced Human Navigation Simulator for Benchmarking Human-Aware Robot Navigation

Noé Pérez-Higueras, Miguel Escudero, Fernando Caballero and Luis Merino
Service Robotics Lab, University Pablo de Olavide, Seville, Spain

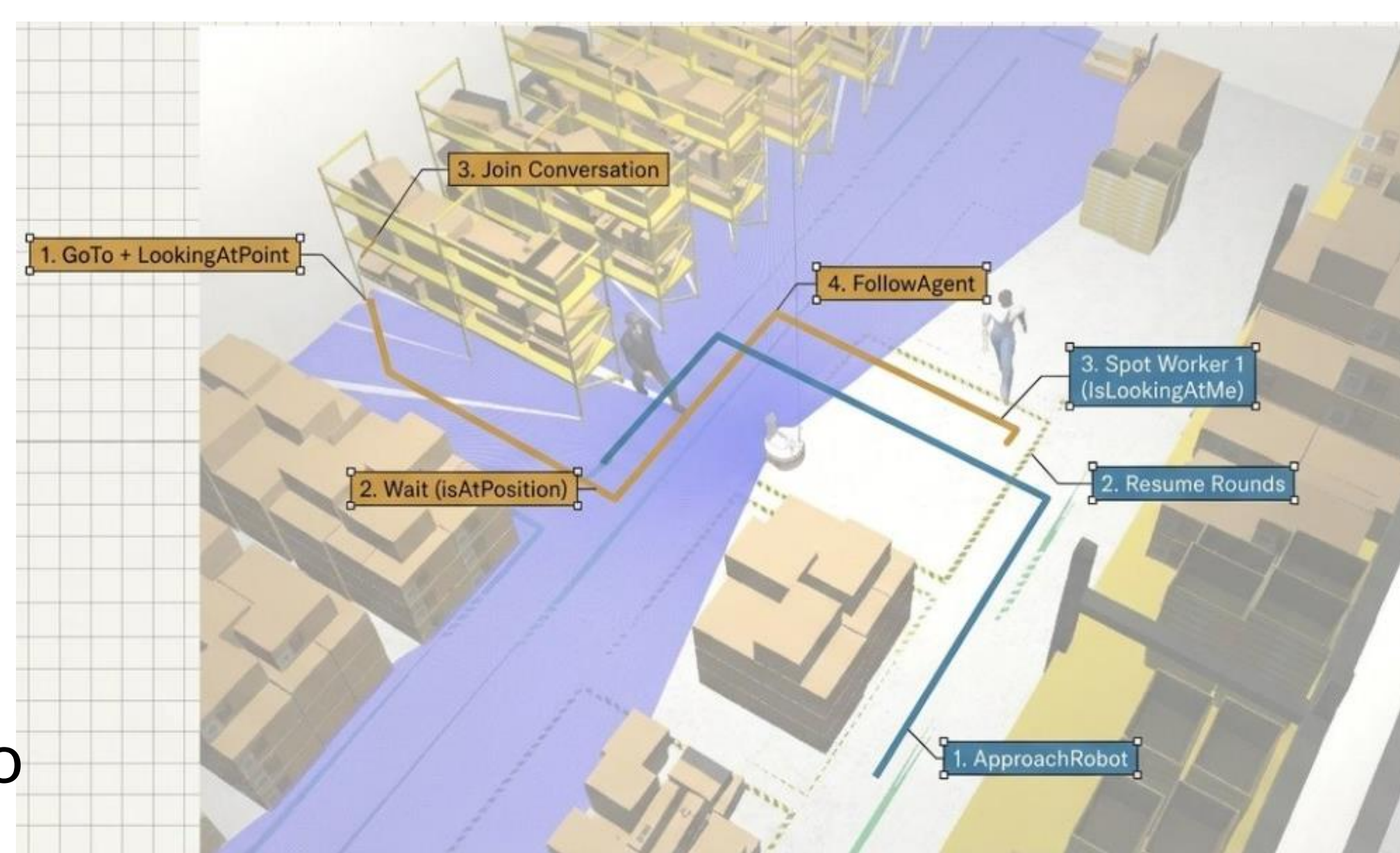
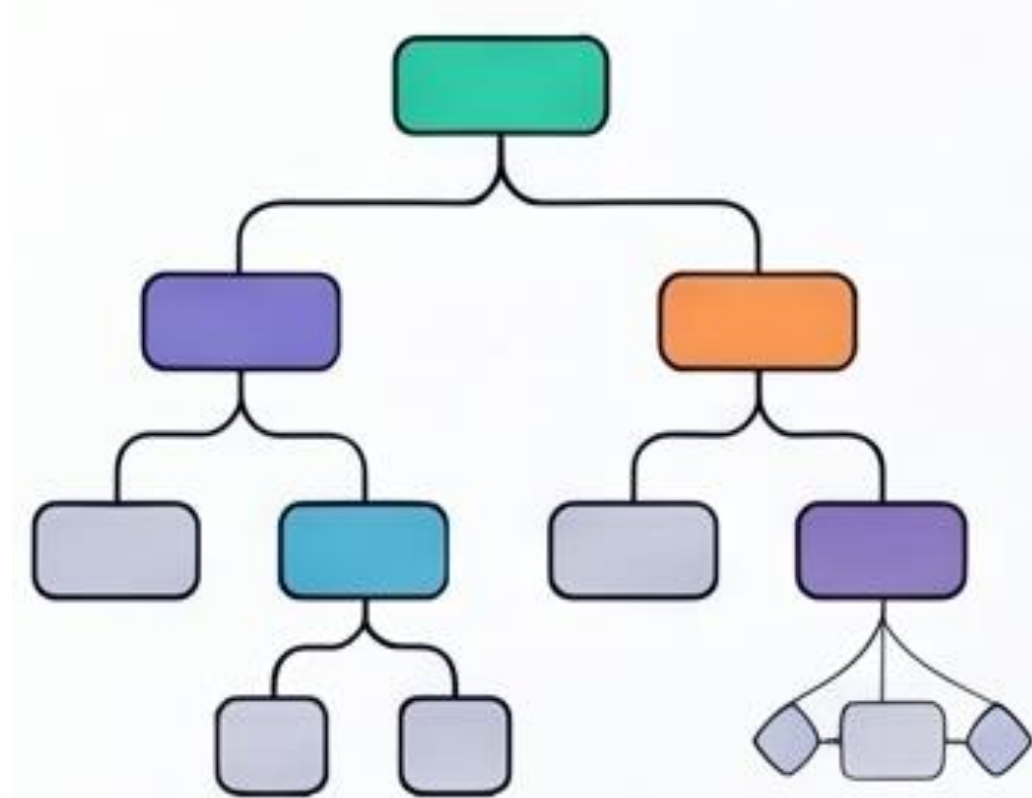
HUMAN SIMULATION

Open-source ROS 2 framework for human navigation simulation

ROS2-based Architecture

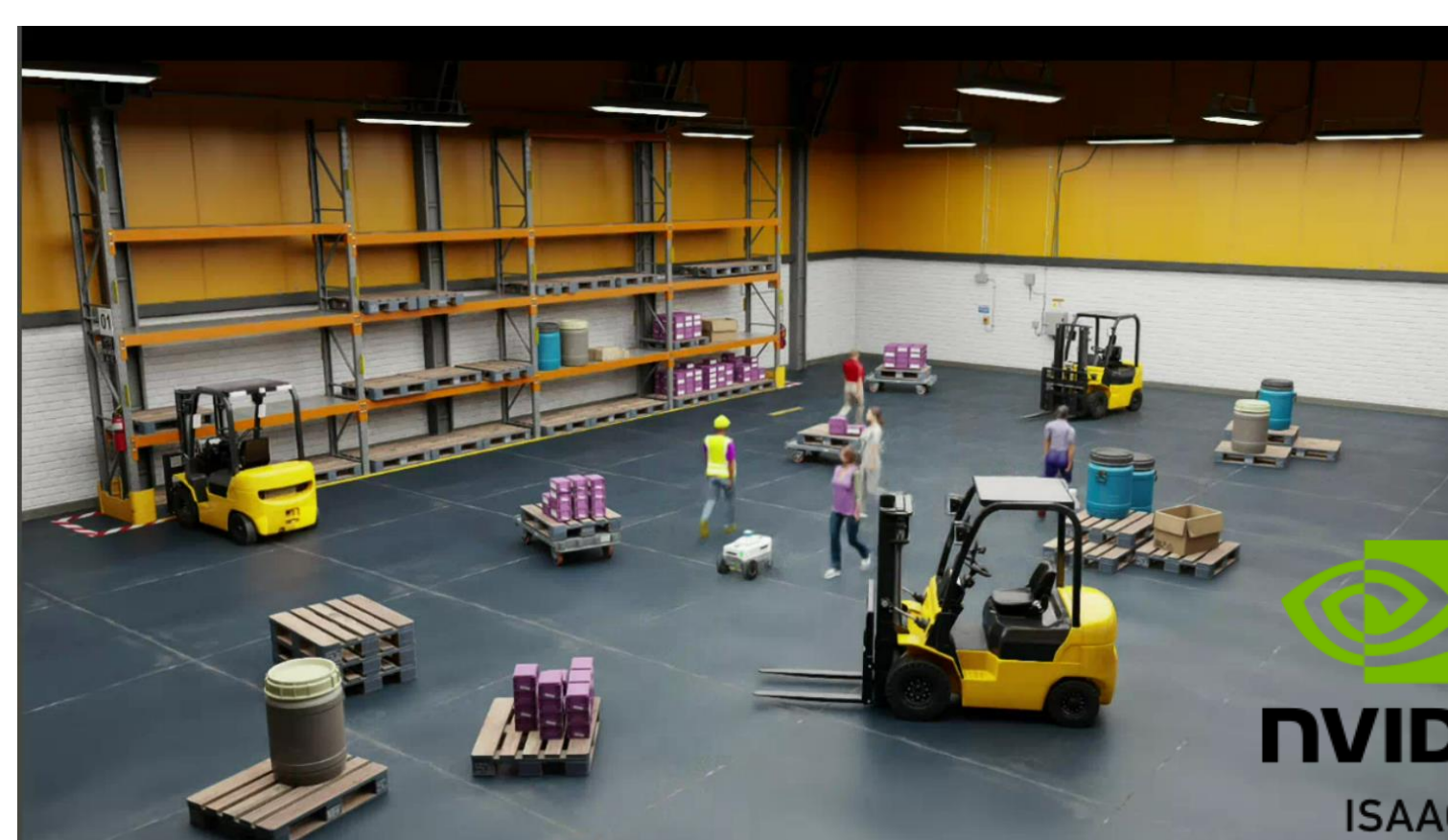


Behavior Tree Orchestration + "noisy" SFM

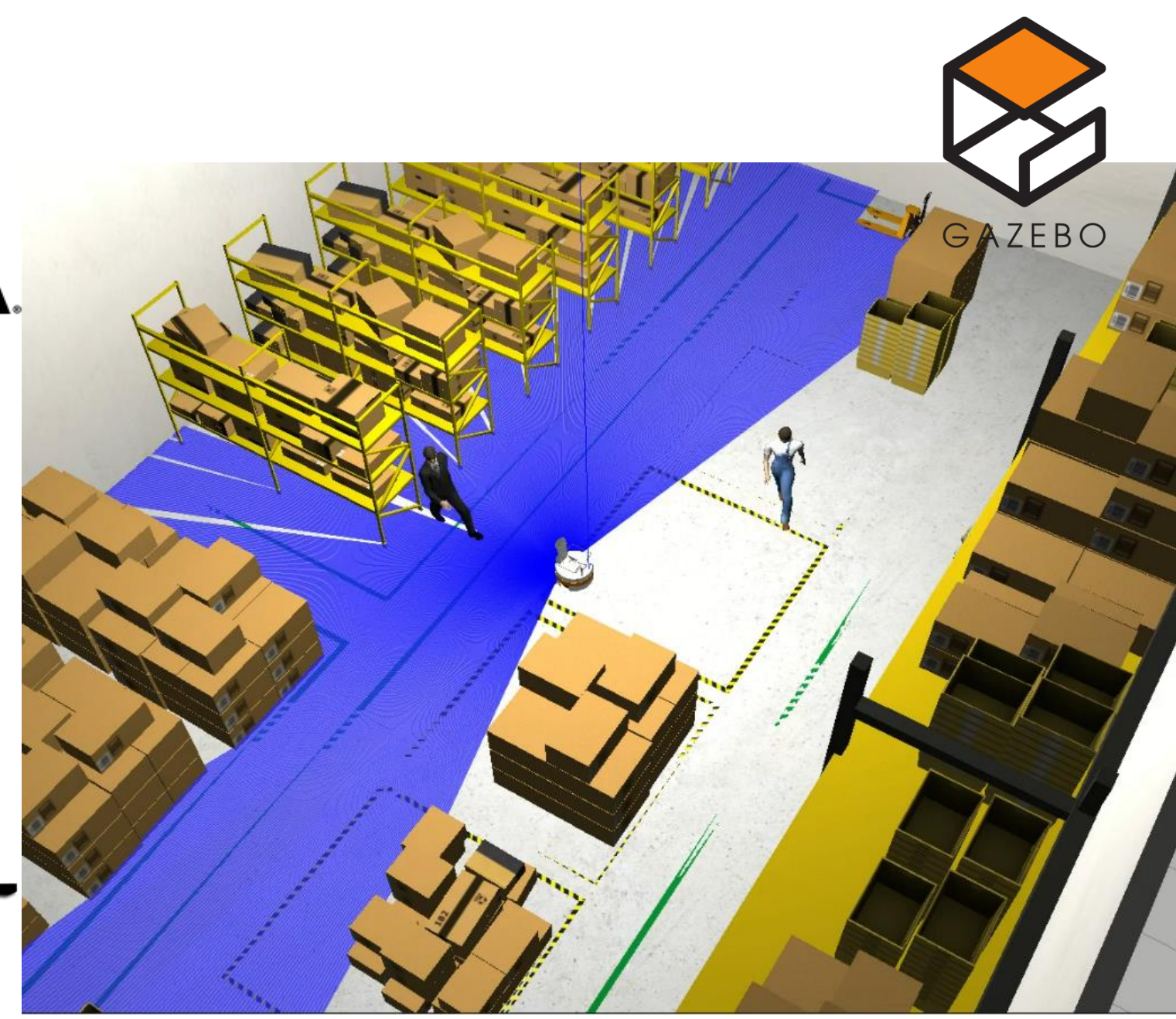


Complex social tasks beyond simple walking. Controlled noise in SFM to mimic natural human diversity

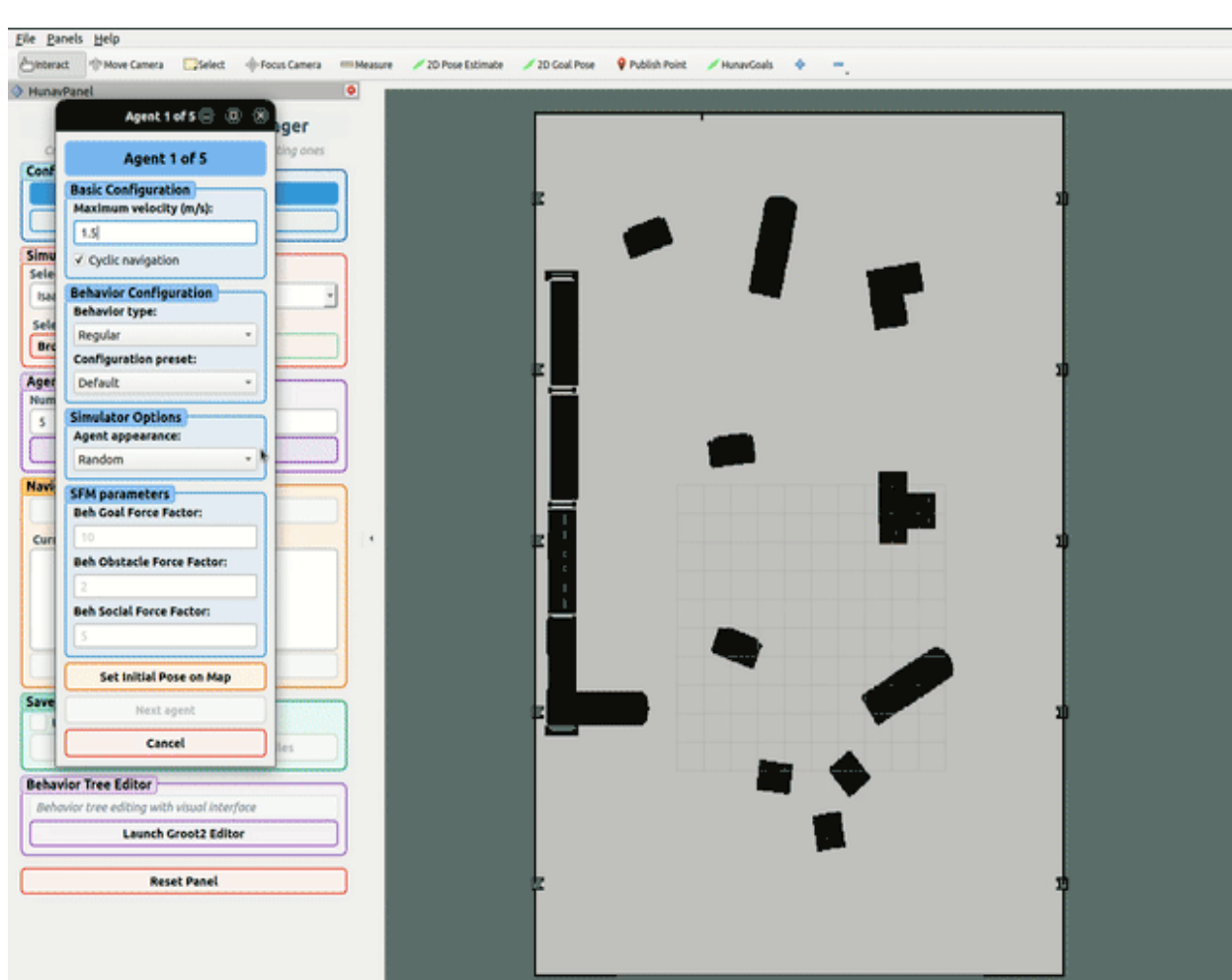
Multi-simulator Integration



Wrappers for robotics engines like NVIDIA Isaac Sim, Gazebo and Webots



Visual Scenario generation + LLM prompts



RViz2 plugin for scenario and agent behavior setup. Optional LLM tool for agent behavior generation.

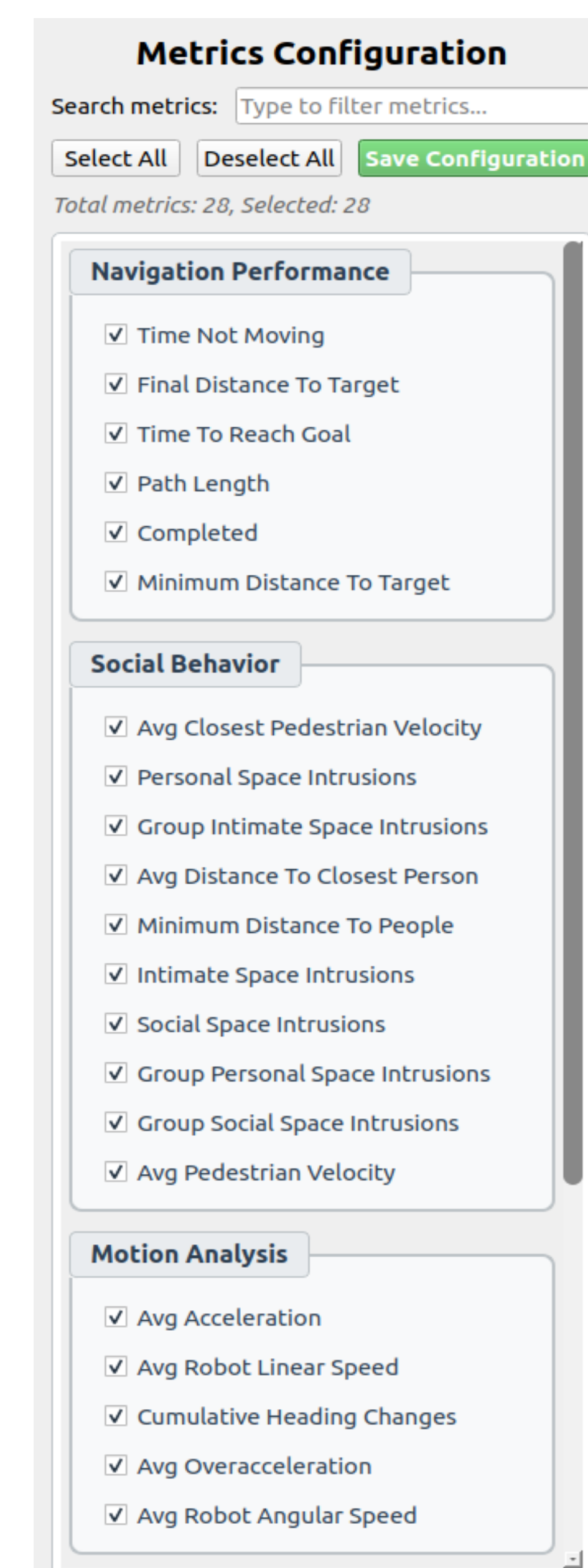
HUMAN-ALIGNED BENCHMARKING

Metrics suite

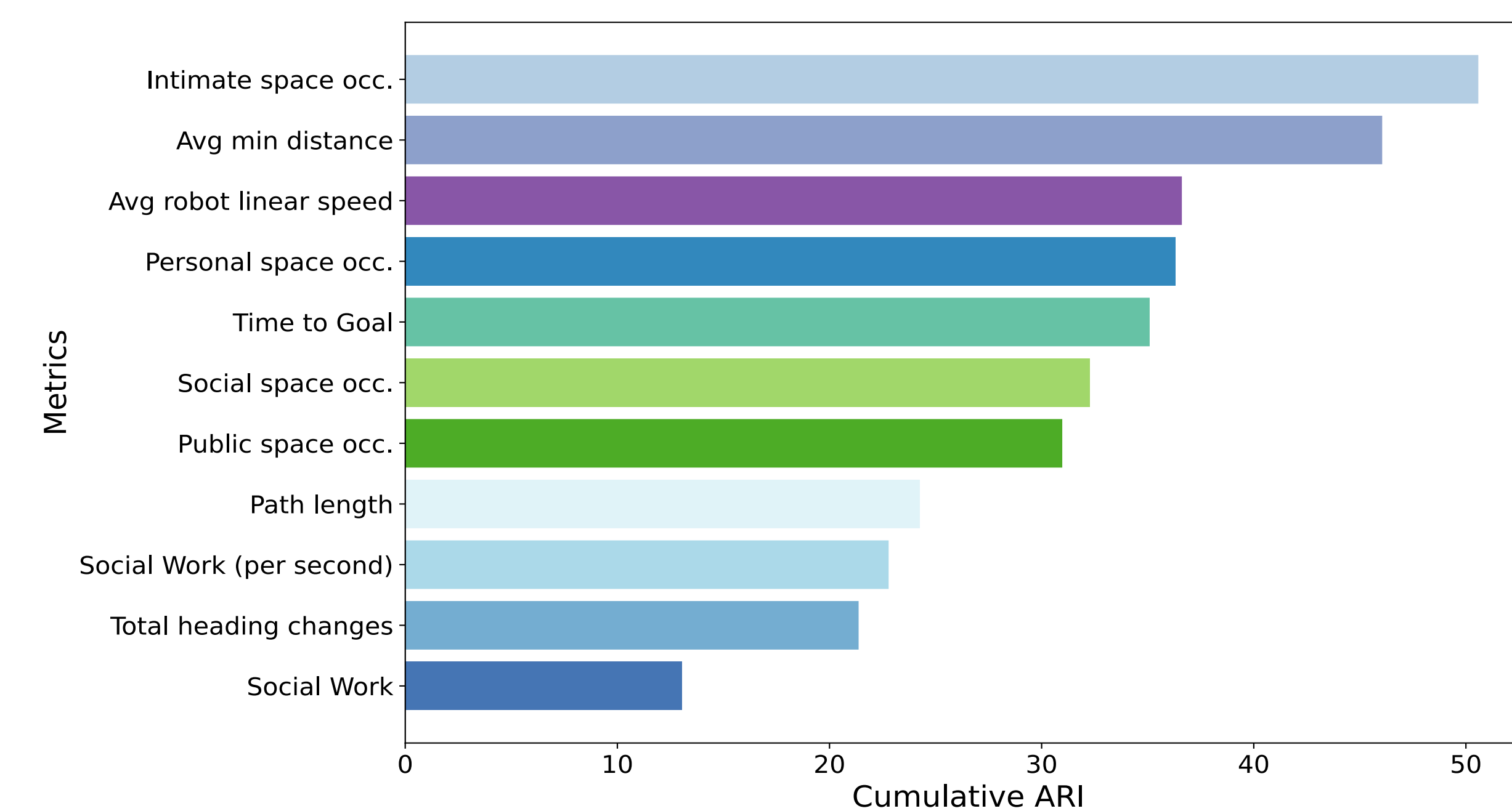
Compilation of 32 metrics for Human-aware navigation from the literature

Bridging the subjective gap

Goal: Identify quantitative metrics (QM) that statistically correlate with human-perceived assessments (HM) collected by survey.



Unsupervised approach



Correlation study

