

BRIDGING THE SIM2REAL GAP IN LIDAR-BASED AUTONOMOUS SYSTEMS

INTRODUCTION

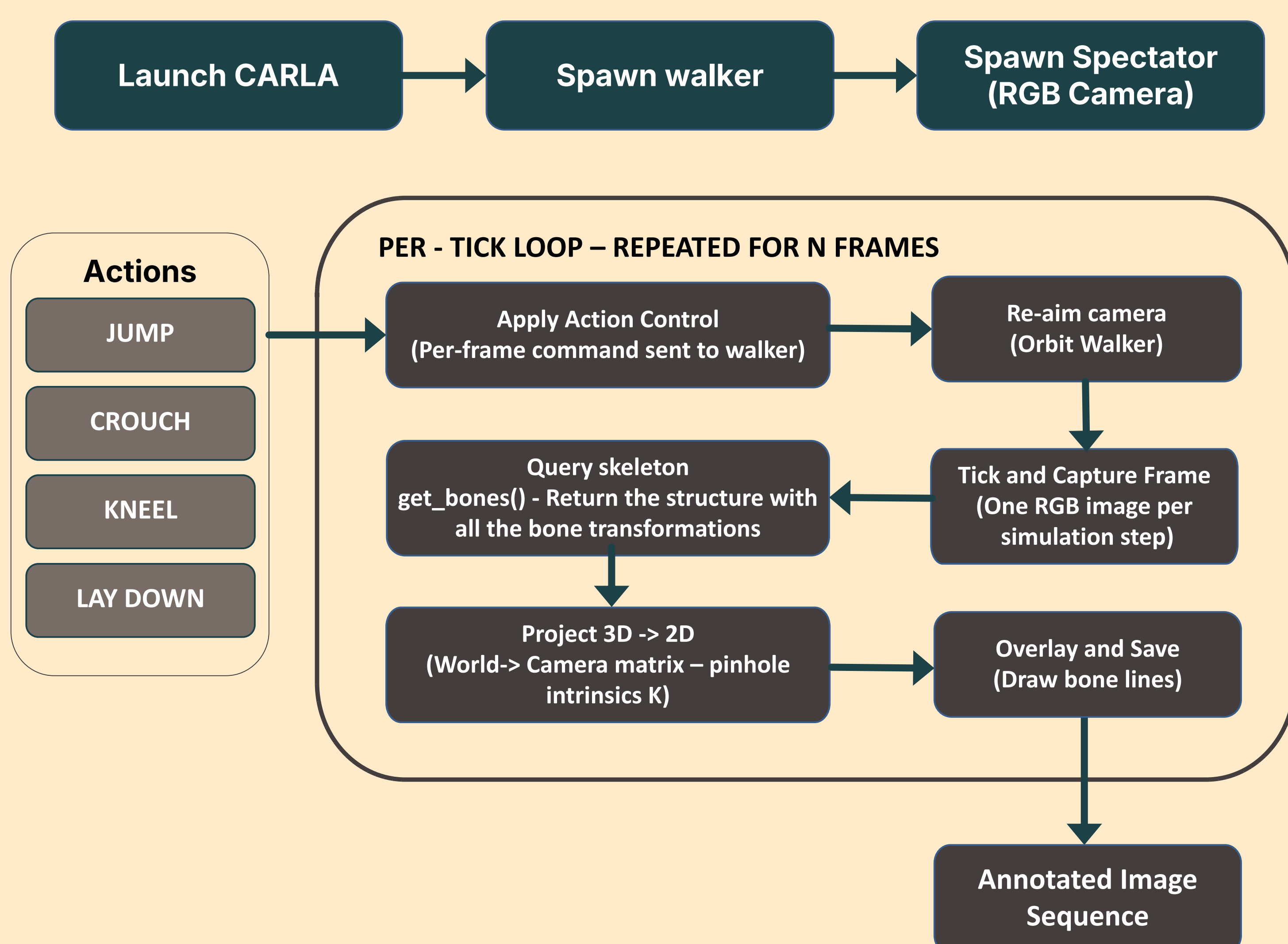
10x Autonomy offers a fully automated, AI-driven data analytics solution designed to accelerate the development of Autonomous systems. This project focuses on bridging the gap between simulated data and the real world for the autonomous systems.

OBJECTIVES

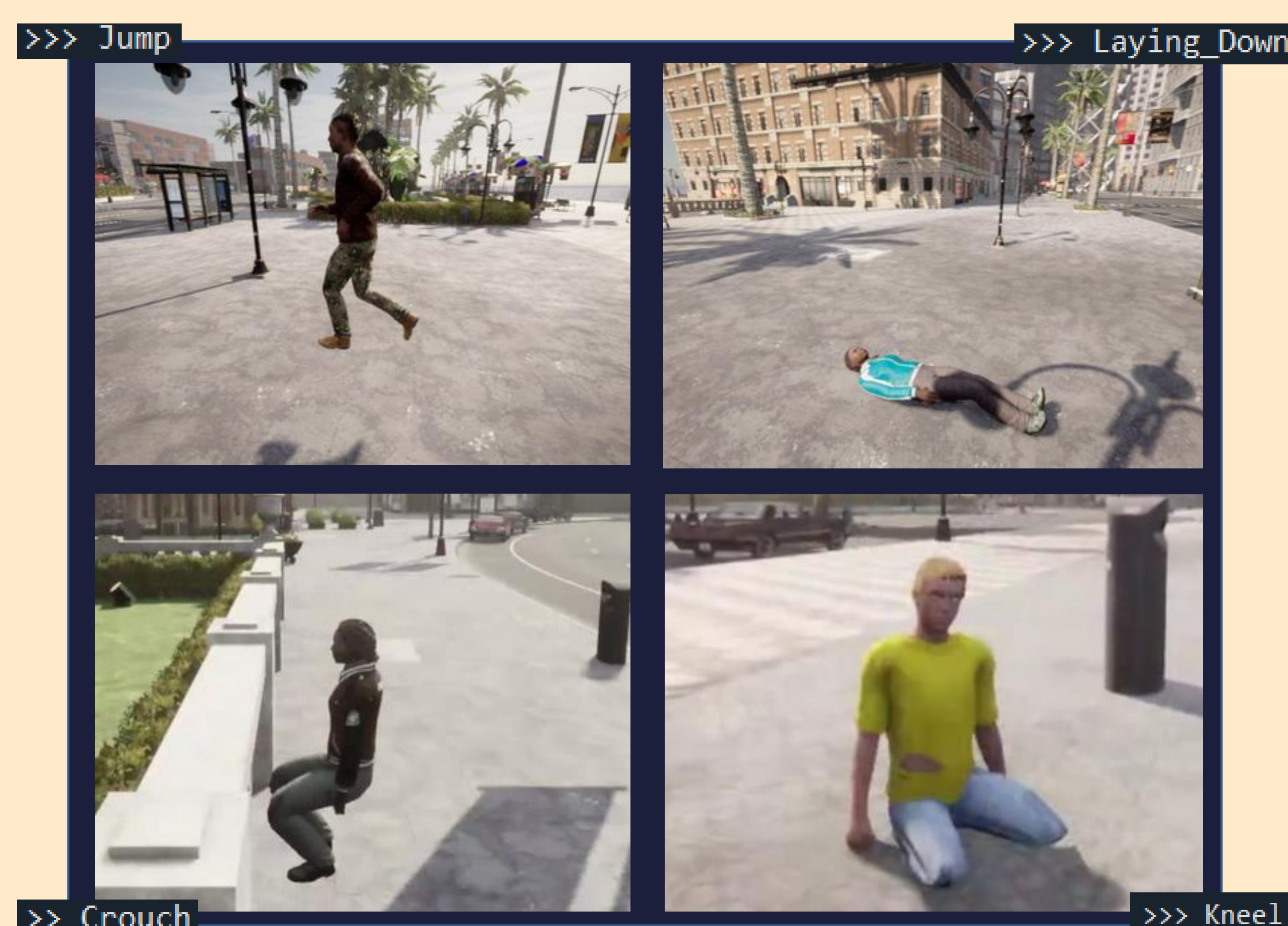
Using Carla, an open-source simulator for autonomous driving, the team focused on two main tasks. One, to add realistic pedestrian motions such as jumping, crouching etc. to improve the similarity between simulated pedestrians and people in real life. The second, to add a larger variety of vehicles into Carla, to mimic real world traffic.

I. PEDESTRIAN ACTIONS

METHODOLOGY

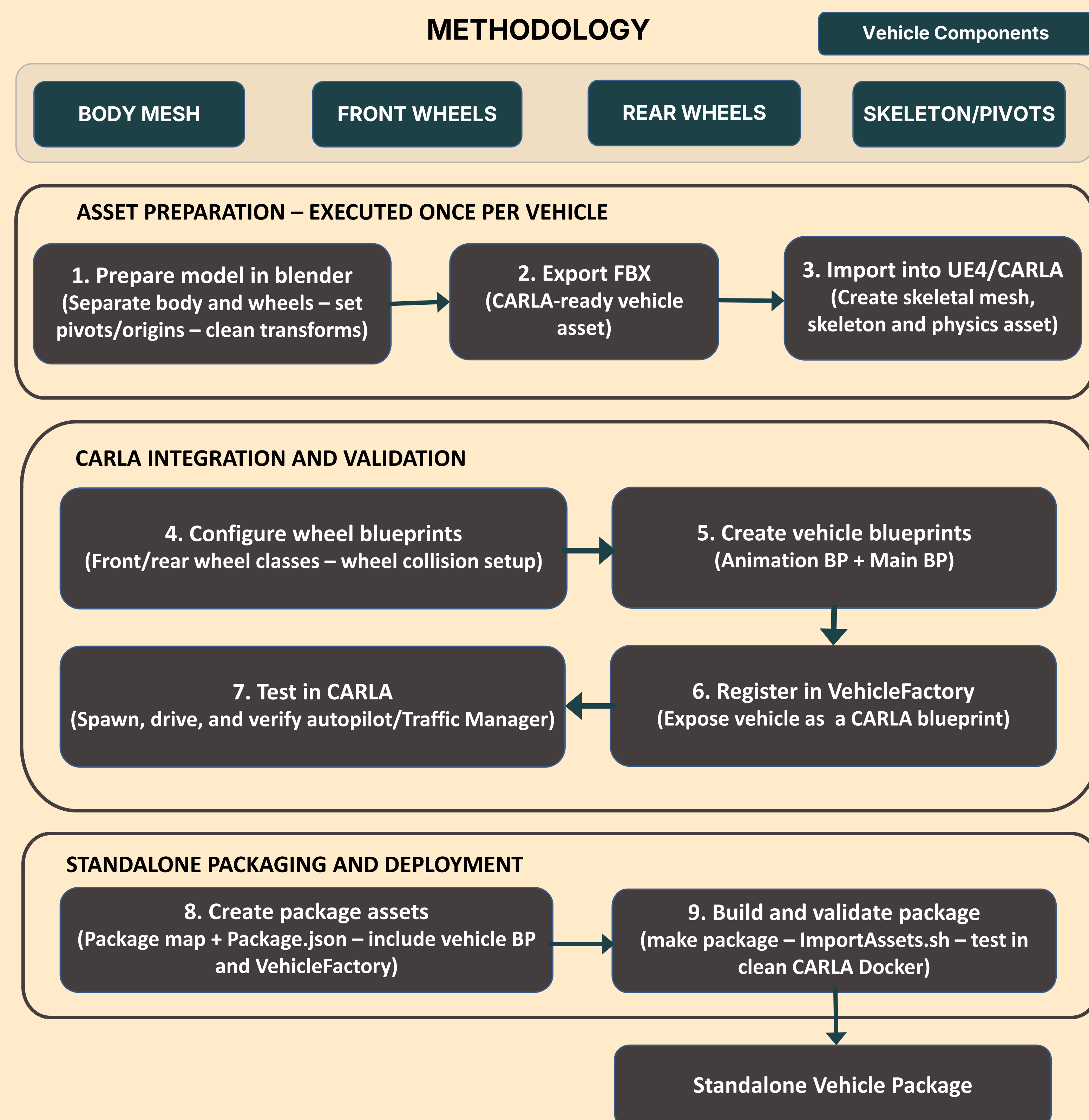


RESULTS

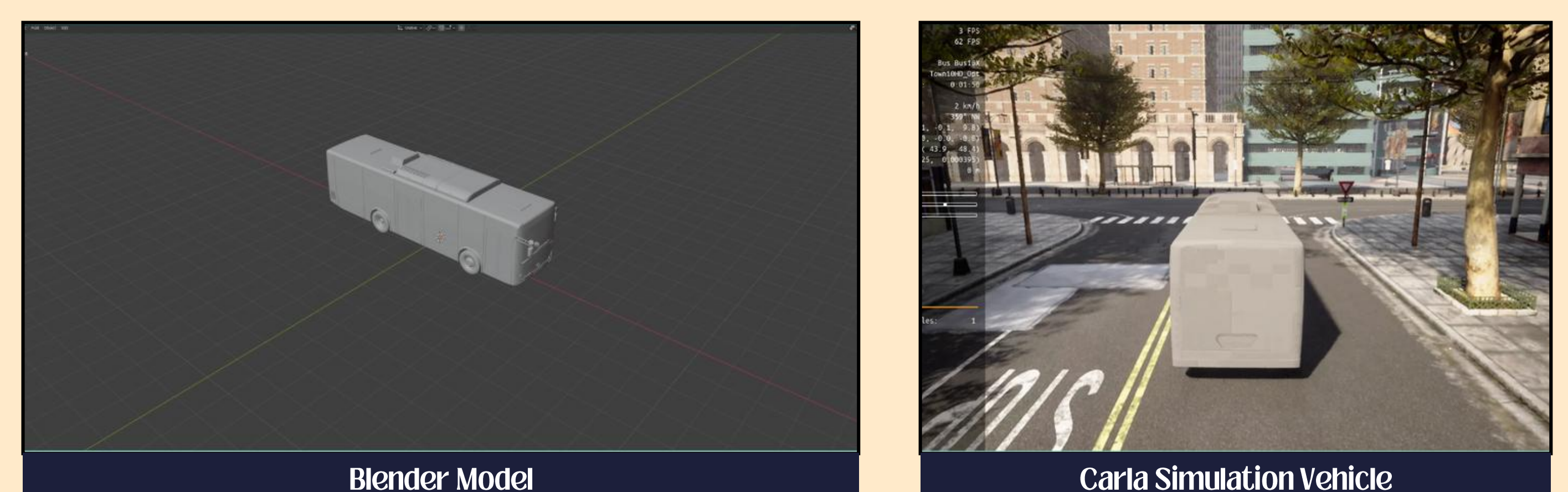


II. VEHICLE INTEGRATION

METHODOLOGY



RESULTS



CONCLUSION

Pedestrian Actions: Four pedestrian actions were implemented in CARLA through three complementary control mechanisms, each integrated into a shared synchronous capture pipeline. Carla requires manual bone control for the spawned walkers. This resulted in unnatural motions by the pedestrians. The next step would be to improve fluidity of actions.

Vehicle Integration: We established and validated an end-to-end pipeline for converting a prepared 3D vehicle model into a fully spawnable and drivable CARLA vehicle, including standalone packaging for clean CARLA environments. The next step is to automate the Blender, Unreal Engine, CARLA registration, packaging, and validation stages to support faster and more scalable integration of multiple vehicles.