

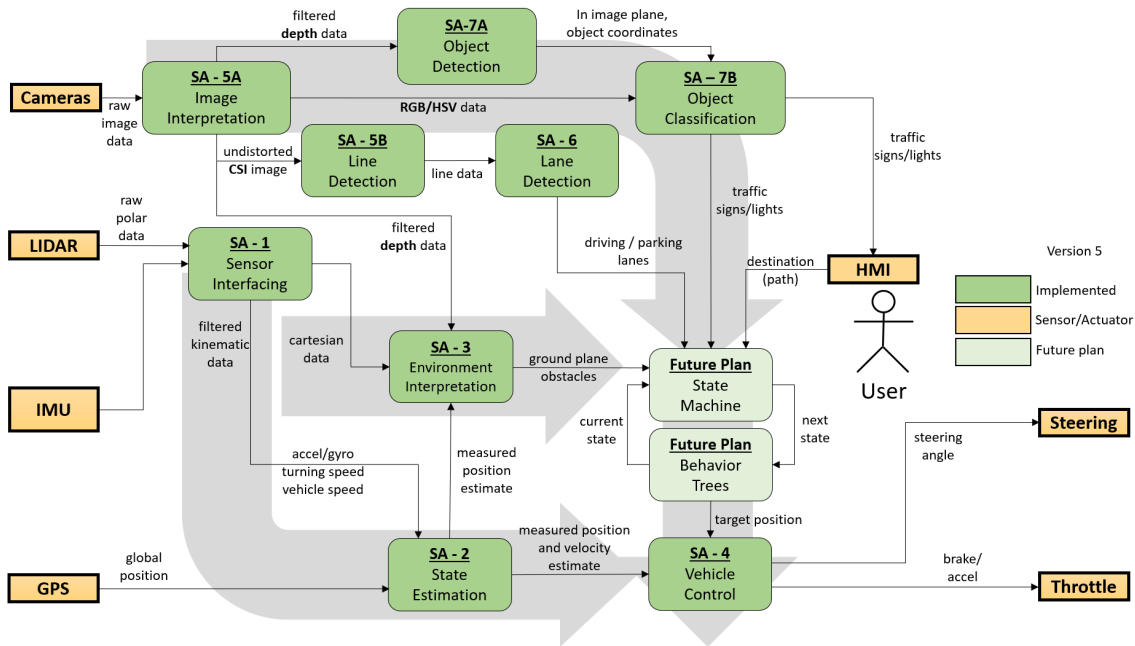
A Quanser Take on Self-Driving

While full autonomy in self-driving vehicles is years away both in theory and implementation, modern advanced driver assistance systems (ADAS) has found it's way in numerous vehicles in varying capacity. Ultimately, as technologies evolve hand-in-hand with people's perception and usage of such assistive systems, academic institutions have increased research efforts targeting self-driving systems.

Quanser's self-driving solution takes a turnkey, cohesive and application-centric approach to enabling education and research in this space. Built on an open-architecture foundation and designed to be language agnostic, this unified ecosystem covers ground in both state-of-the-art hardware as well as support for software APIs and frameworks already in use by academia and industry alike.

Access to both a fleet of NVIDIA powered 1/10th scale research vehicles, infrastructure such as smart traffic lights, and a self-driving cityscape map creates a autonomy sandbox for self-driving courses and research endeavors. Further access to a digital twin and equivalent of the hardware and environment via Quanser Interactive Labs further enables academics looking to verify code via a dynamic simulation, or generate datasets with complex environments otherwise not feasible in a lab setting, such as 50km of highway.

Finally, advanced curriculum targeting relevant self-driving concepts such as lane-keeping, state estimation, lateral Stanley control, behavior planning, etc., provide students with safe hands-on activities to explore autonomy in the field through cascaded lab experiences.



Curriculum Learning Objectives

- Develop foundational self-driving engineering literacy
- Gain operational skills in the practical software implementation of self-driving algorithms
- Explore and compare the performance and accuracy of analytical vs. machine learning approaches to perception
- Explore visual, ranging and odometric sensing capabilities and multi-sensor & probabilistic fusion technologies
- Explore multi-agent complex driving scenarios and ego-vehicle decision making pipelines

Multidisciplinary Lab for Research, Teaching, and Outreach



Quanser users are building a [global community](#) by sharing code, research, and teaching materials to help each other learn and build together.

Quanser Solutions for Self-driving



QCar 2



Smart Traffic light