QUANSER
INNOVATE · EDUCATE

A Quanser Take on Self-Driving

Modern Self-Driving

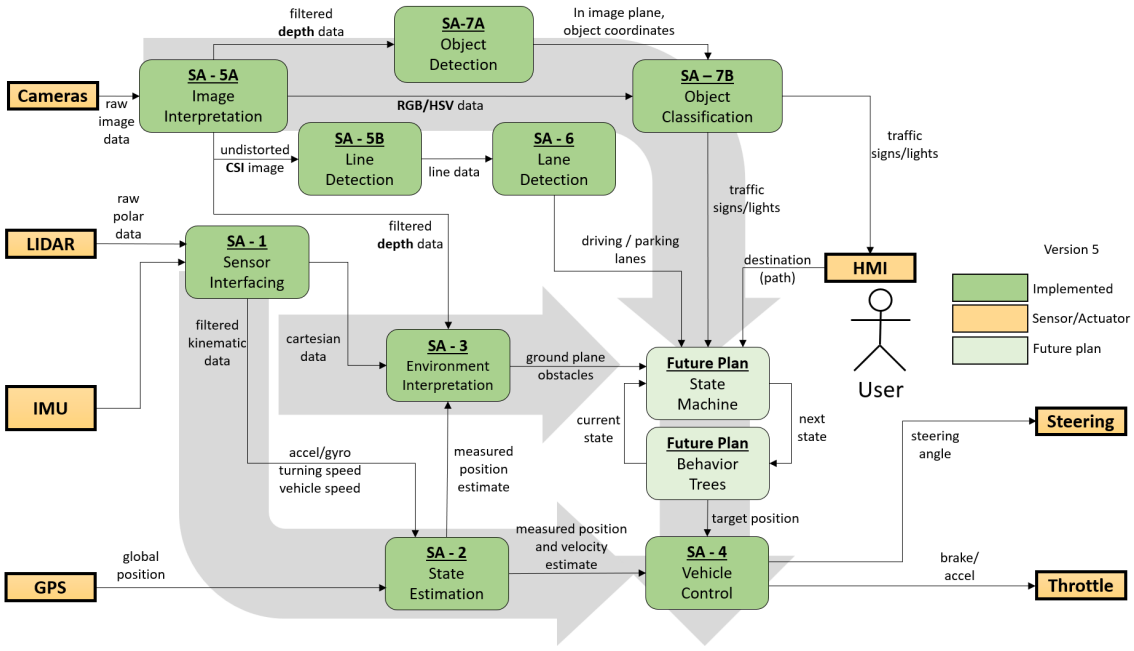
While full autonomy in self-driving vehicles is years away both in theory and implementation, modern advanced driver assistance systems (ADAS) has found it's way in numerous vehicles in varying capacity. Ultimately, as technologies evolve hand-in-hand with people's perception and usage of such assistive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

Quanser Approach

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

Self-driving Research and Education Centers

University of Surrey
United Kingdom

Oakland Schools
Michigan, US

Universidad Técnica Federico Santa María,
Chile

Texas A&M
Texas. US

Purdue University
Indiana, US

York University
Canada

KFUPM
Saudi Arabia

UT Austin,
Texas, US

Northeastern University
Massachusetts, US

Queen's University
Canada

University of Michigan,
Michigan, US

Beijing Institute of Technology
China

Quanser Solutions for Self-driving

QCar 2

Smart Traffic light