



CPS: Medium: GOAL: Real-Time Computer Vision in Autonomous Vehicles: Real Fast Isn't Good Enough, CPS 1837337, Oct. 2018, J. Anderson (PI), J. Frahm, D. Smith, UNC, S. Wang, GM

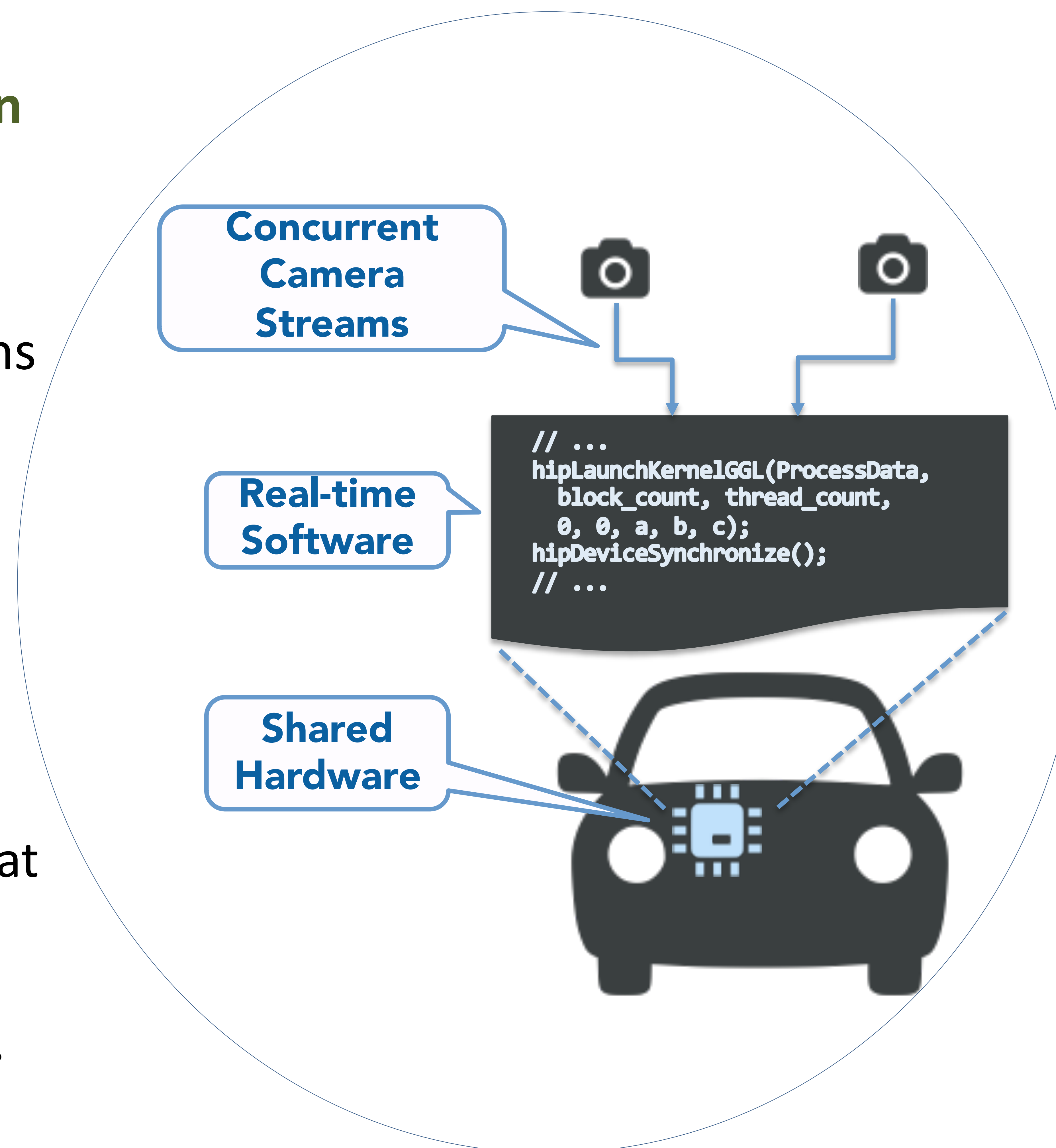
Challenge:

- How to support **computer vision (CV)** functions (e.g., obstacle tracking) w.r.t. multiple camera feeds on shared hardware that must support other computations as well?

Solution:

- Evolve **CV programming frameworks** to enable predictable real-time execution on shared hardware.
- Produce **analysis** for validating that CV functions finish **on time**.
 - Complications: Cycles and "improper" GPU usage in CV code.

Project info (CPS 1837337, UNC, James H. Anderson, PI, anderson@cs.unc.edu)



Scientific Impact:

- Want to bridge a major **disconnect** affecting autonomous vehicles:
 - to CV researchers, "real time," usually means "real fast"; certifiable vehicles, however, must be "real time" in the sense of being **predictable**.*

Broader Impact:

- **Society:** Predictable CV on less (and thus cheaper) hardware is a key enabler for affordable autonomous cars.
- **Industry:** Cross pollination through internships at General Motors.
- **Outreach:** Demos of 1/10-th scale autonomous vehicle to local K-12 students.