Buzzmobile - A Reactive Control Autonomous Vehicle

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Georgia Tech buzzmobile

HISTORY

The Agency: undergraduate AI / ML club at Georgia Tech. Founded with the purpose of creating an autonomous float for the homecoming parade: buzzmobile.

The final hardware was modelled after Tech's ramblin' wreck. Done in collaboration with the undergraduate robotics club.
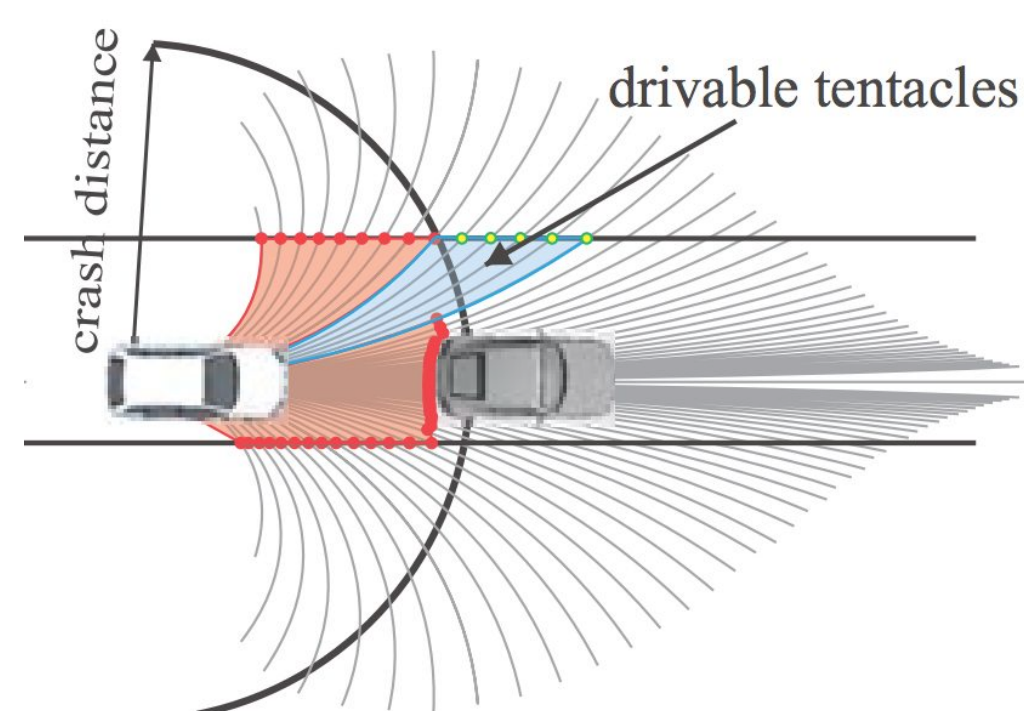
youtube.com/watch?v=csKghReaDcY

Parade floats need to:
- Drive a pre-determined route
- Swerve around obstacles if possible
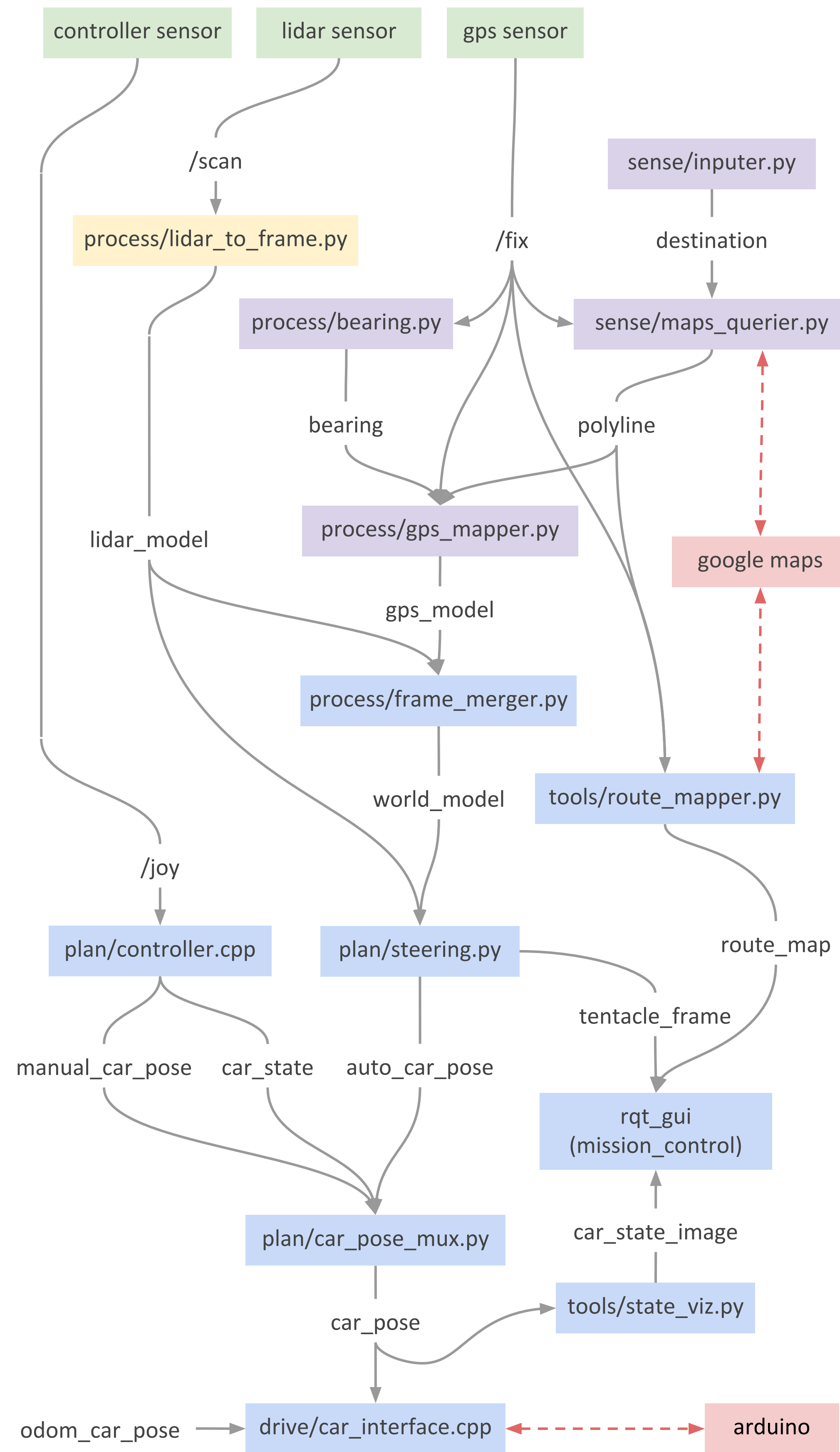- Stop if near collision with obstacles

REACTIVE CONTROL

Idea: only take into account the current state of the world to decide the next action to take.


Method:
- identify obstacles, routes, and everything else
- Create world frame of drivability
- Steer wheels in direction of highest tentacle score
- Stop if obstacles too close

BUZZMOBILE ARCHITECTURE

Using the world model, the system can compute the best scoring tentacle and choose it as the best action to take

lidar frame   gps frame   world frame

action   future action
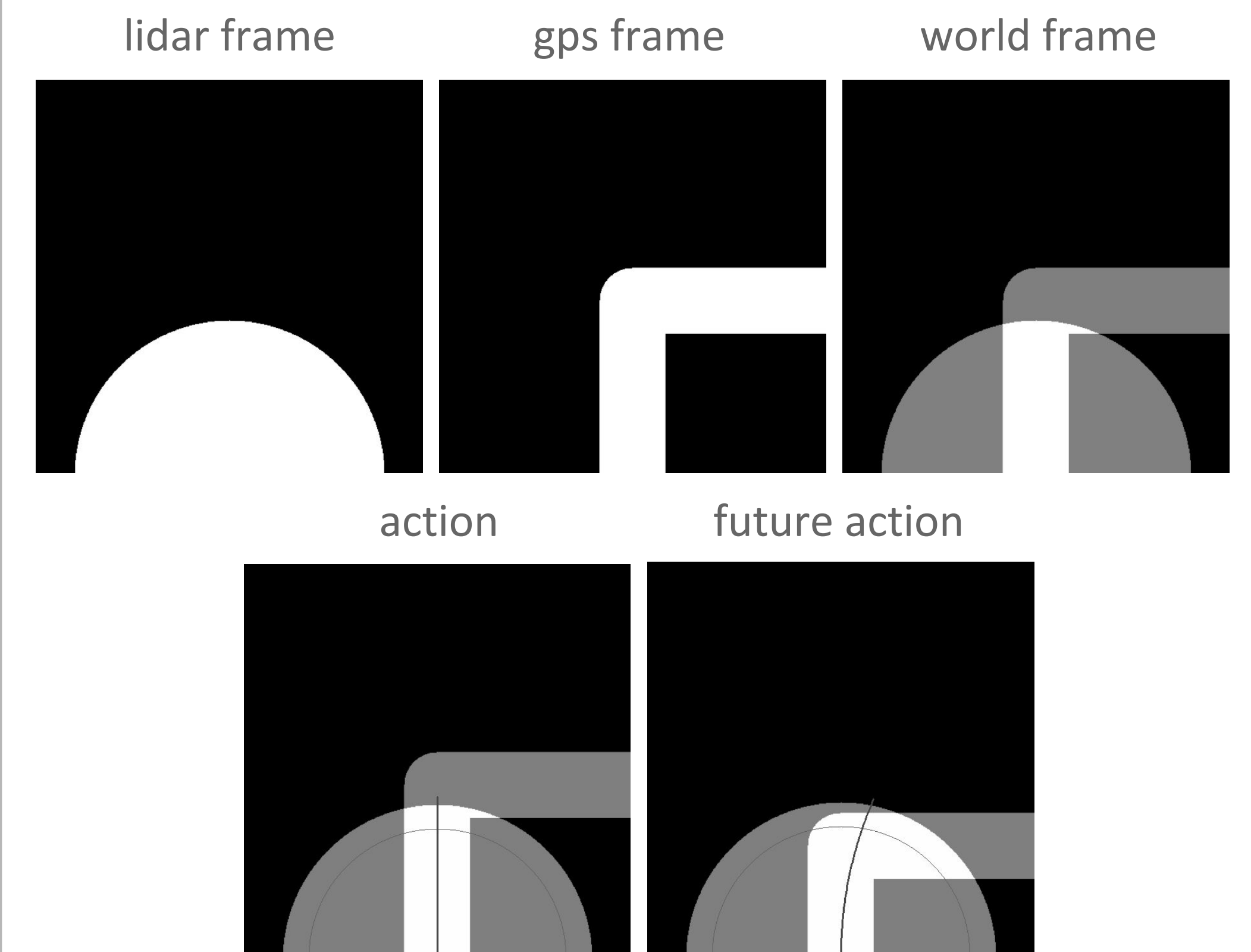
CURRENT WORK

- Automated simulation tests using our in-house testing framework pyrostest (github.com/gtagency/pyrostest)

- Vision component for better obstacle detection

KEEP IN TOUCH

The Agency   https://gtagency.github.io
Buzzmobile   https://github.com/gtagency/buzzmobile
Pyrostest   https://github.com/gtagency/pyrostest
Me   https://raphagl.com