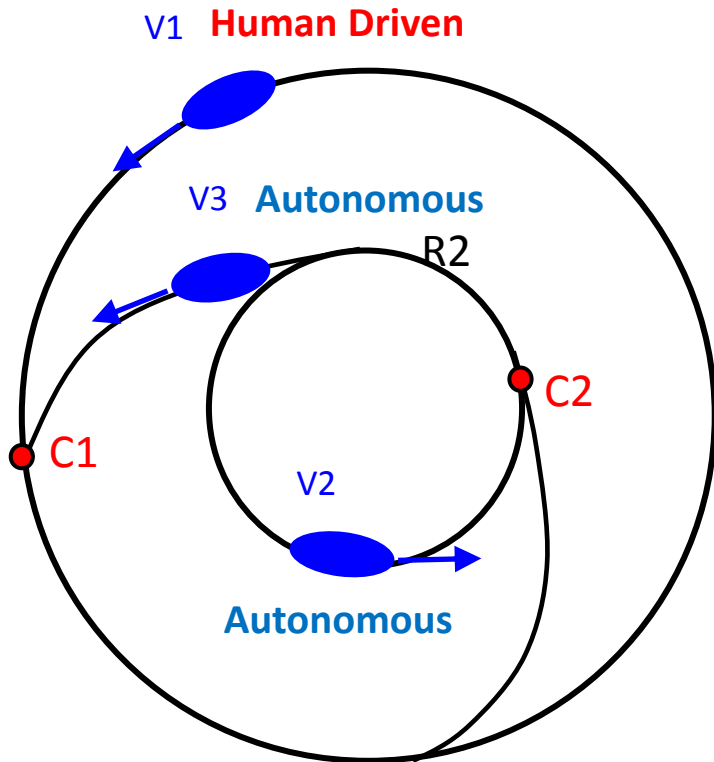


Semi-Autonomous Roundabout Project

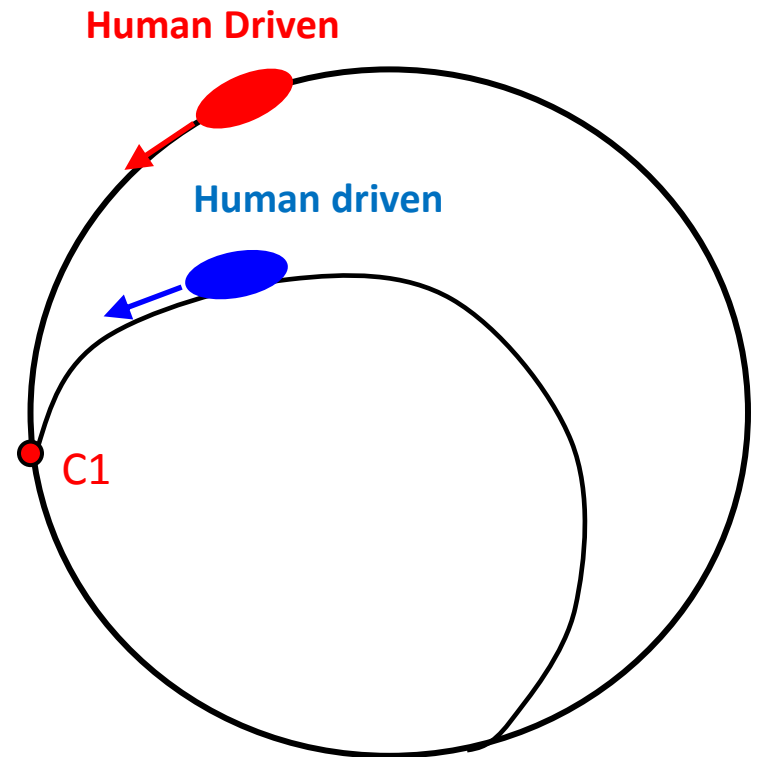
Summer 2011

Application Problems

(1) Bria Problem



(2) Mukul Problem

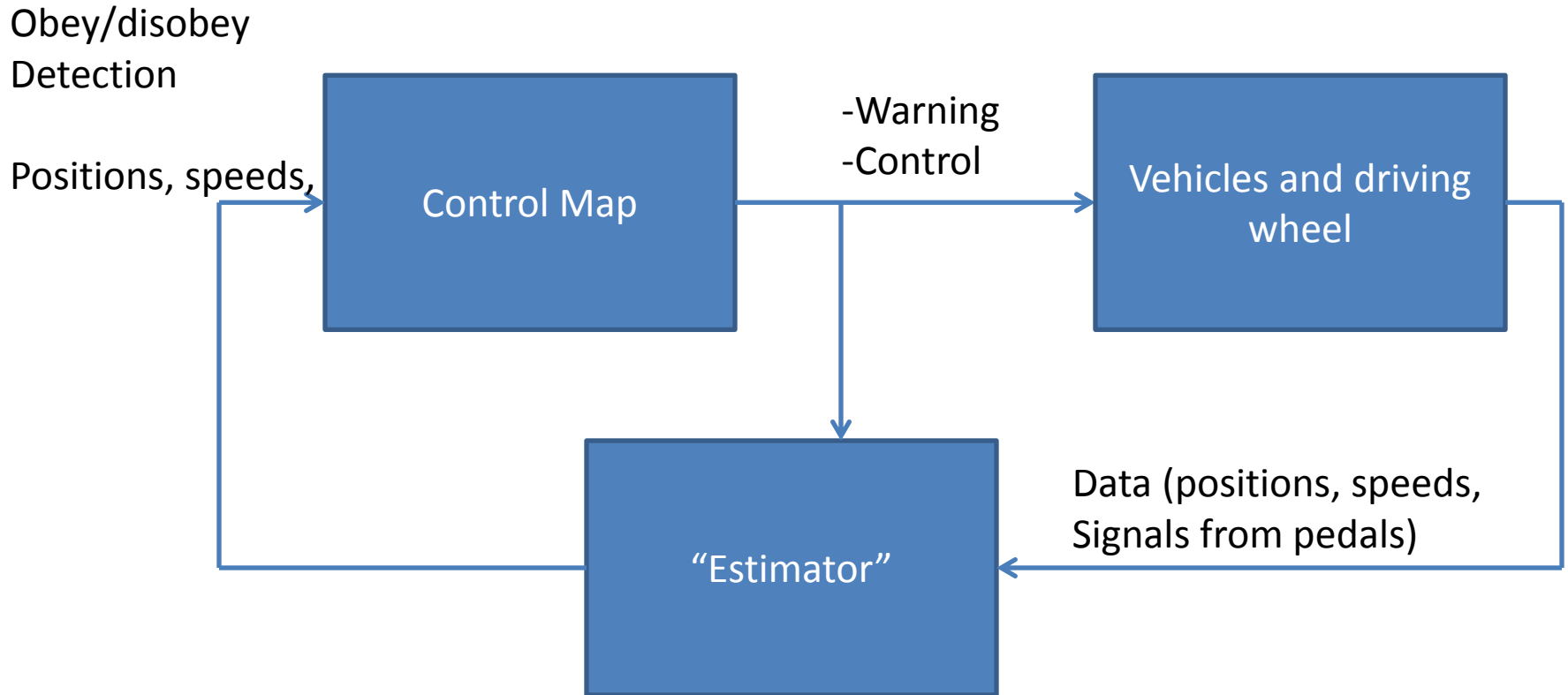


When Bria is done with her problem, she will start helping Mukul

Problem (2) Overview

- Two human-driven vehicles with on-board safety system
- Each of the two vehicles implements Sid algorithm with warning and control phases with the following assumptions:
 - Drivers do not change their mind regarding obeying/disobeying
 - The system can detect instantaneously whether a driver obeys the warning

Control overview



The main role of the estimator here will be to determine whether a vehicle obeys or disobeys the warning based on the pedals signals

Tasks

- Figure out how to detect acceleration versus braking from the pedal
- Get another driving wheel and laptop
- Design the pseudo-code to be implemented on each vehicle based on Sid algorithm. Keep things modular.
- Coding of the pseudo code on the vehicles
- Acquisition of all vehicle parameters: min and max controls, min and max human inputs, response time,...
- Run trials with human subjects

High-level Timeline

- By June 15th: Figured how to get accel/braking from the pedals
- By June 21st: Pseudo-code designed
- July 7th: Pseudo-code implemented on vehicles
- July 15th: all parameters acquired
- July 31st: fist working demo of the system
- Aug 15th: acquisition of data with 6-7 different subjects

Meetings

- Mondays 5:30PM-6:30PM
- Meeting format: each student gives a ppt presentation showing:
 - work done during the past week
 - difficulties/problems that were solved and how
 - problems left to solve
 - how they will be solved in the coming week
- Presentations should contain as much detail as possible including figures, data, code, plots, etc.
- Presentations should be uploaded on the wiki page under “Semi-autonomous roundabout project (Summer 2011)”:

<https://wikis.mit.edu/confluence/display/DelVecchioLab/Multi-vehicle+Lab>

Note: the link to the project will appear only after you log in as it is a protected page