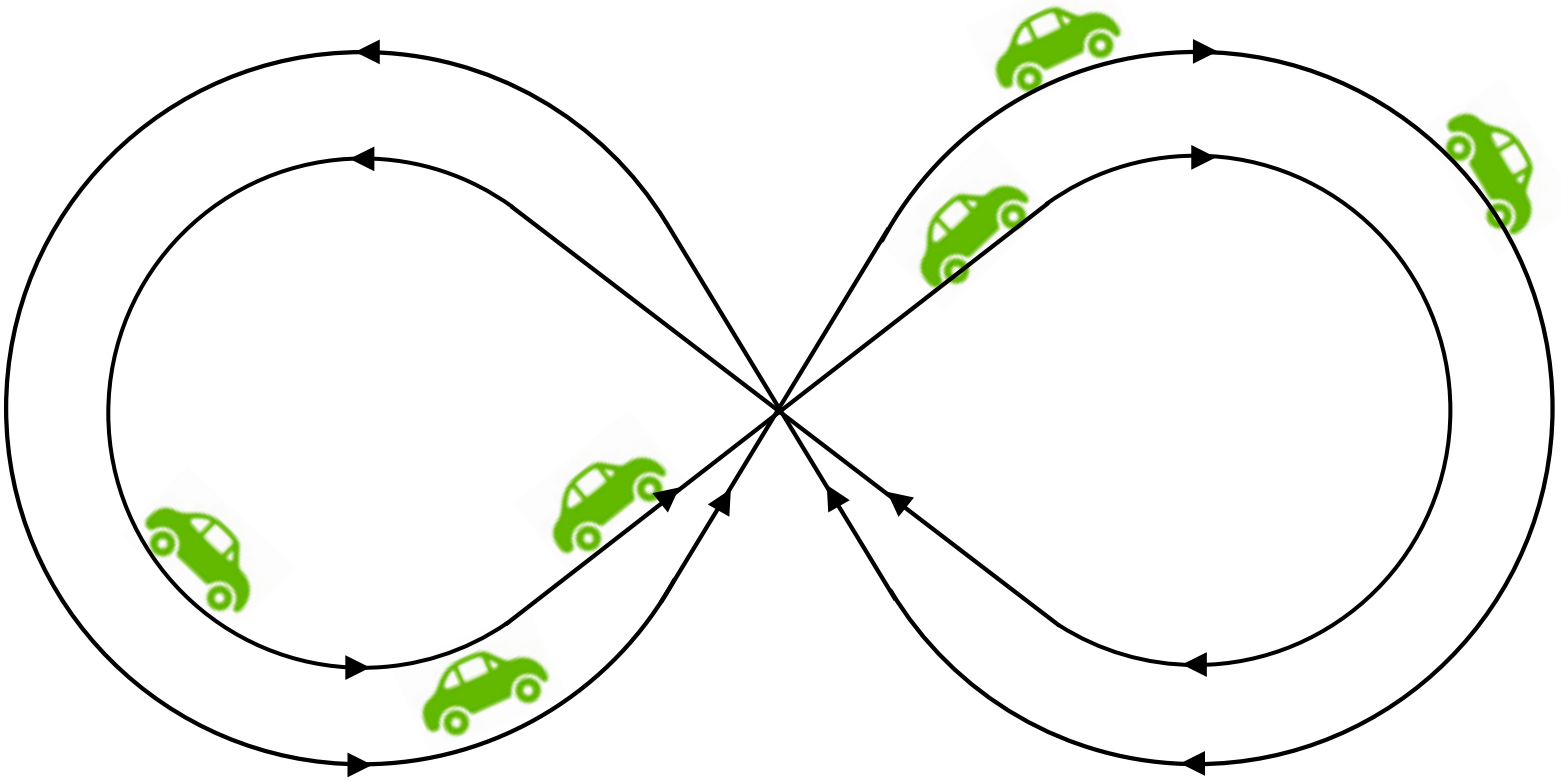
# Multivehicle collision avoidance project

Summer 2011

# Path layout

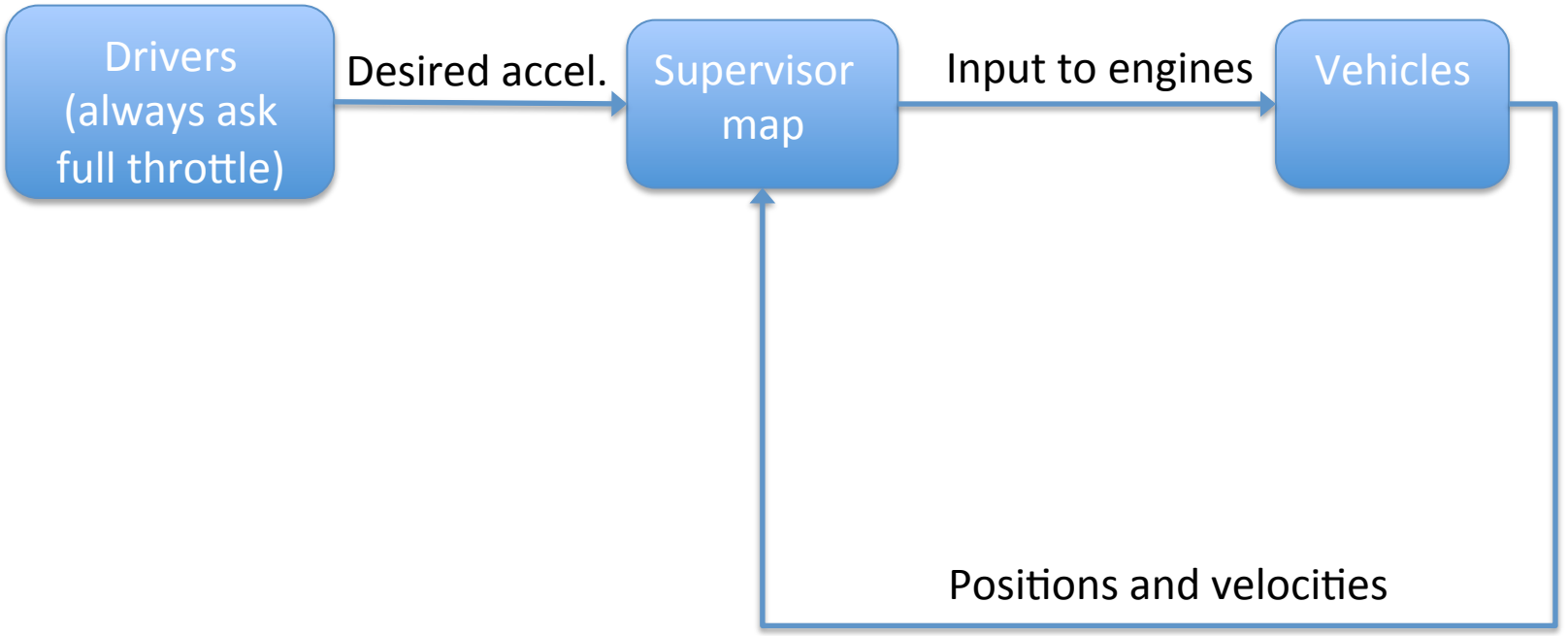
2 figure-of-eight, 3 cars each



# Problem overview

- 6 vehicles drive autonomously along the two paths
- All vehicles know position and velocity of the other vehicles
- The same safety algorithm runs on all vehicles
- Vehicles follow a prespecified simple rule (e.g. go at max speed) unless forbidden by safety algorithm

# Control scheme



# Tasks

[T1] Design path following pseudocode (Deniz)

[T2] Design pseudocode for the rear-and collision avoidance (supervisor state O1) (Deniz)

[T3] Design pseudocode for the supervisor automaton (John)

[T4] Implement code T1-T2 (Deniz)

[T5] Implement code T3 (John)

[T6] Design pseudocode for side-impact avoidance at intersections (supervisor state O2). (John)

[T7] Acquire vehicles' parameters (Deniz)

[T8] Implement code T6 and test on pc (John)

[T9] Test full algorithm on vehicles (Deniz/John)

**Keep the code modular, clean, and well documented.**
**Your code will be used by others!**

# Timeline

Deniz:

- By June 20th design path following and rear-end collision pseudocode (T1,T2)
- By July 4th implement path following and rear end collision code (T4)
- By July 11th code tested onboard and debugged
- By July 25th vehicles' parameters acquired (T7)
- By August 1st, working demo

John:

- By June 20th design and implement automaton pseudocode (T3+T5)
- By July 4th design side-impact pseudocode (T6)
- By July 11th implement and debug side impact code on pc (T8)
- By July 25th test code onboard and debug (T9)
- By August 1st, working demo

# 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.
- Presentation should be uploaded on the wiki page under the section "multivehicle collision avoidance project":

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