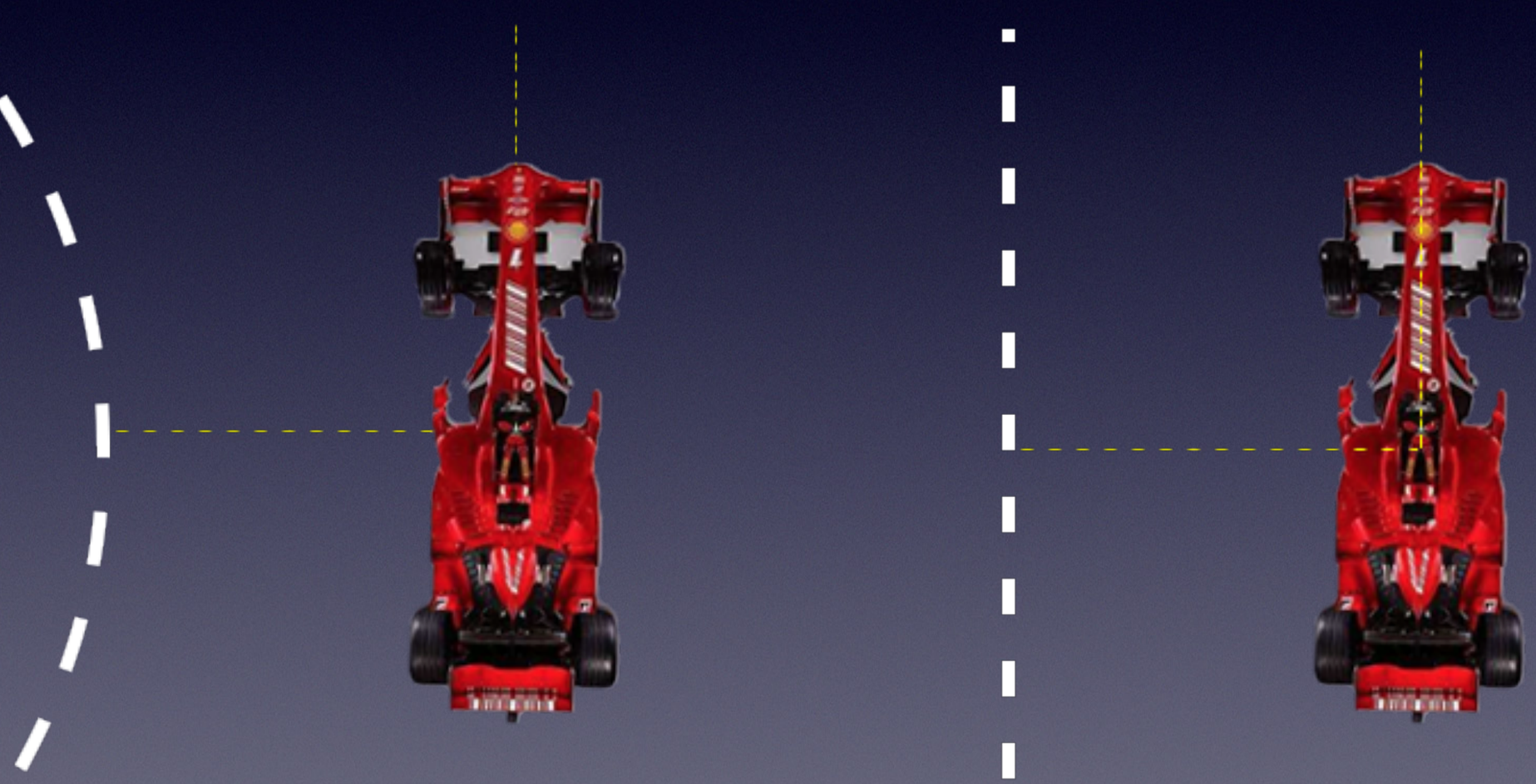
자율주행을 위한 컴퓨터 시스템 최적화

최항기 박중석
DCSLAB

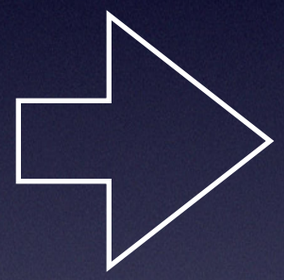
Motivation

- The car needs to make an accurate judgment according to the surrounding environment.
- In order to autonomous drive better, we need to get more useful informations.

Puzzle ?



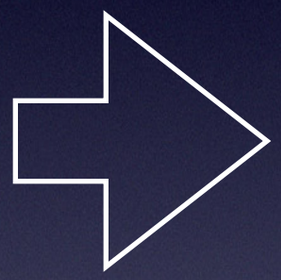
SPEED
RPM
TRACK_ANGLE
TRACK_WIDTH
YAW
DISTANCE
PASSED_TIME



ACCEL
BREAK
STEER

Not enough!

SPEED
RPM
TRACK_ANGLE
TRACK_WIDTH
YAW
DISTANCE
PASSED_TIME



ACCEL
BREAK
STEER

We need more informations

The purpose of S/W improvements

- Whether the vehicle in the straight, or in the corner.
- How much is the curvature of the corner?
- Whether we can speed up to save time, or slow down to get stability.

Speed sensor

distance sensor

angle sensor

Speed control

Lane keeping

CAR

Speed sensor

distance sensor

angle sensor

Storage

Speed control

Lane keeping

CAR

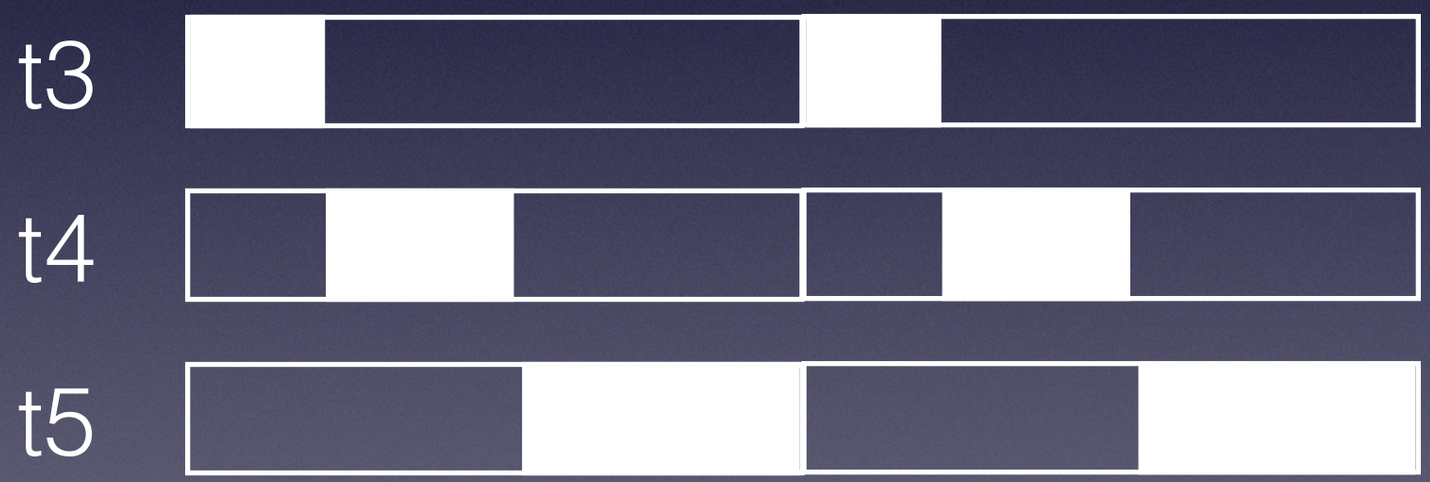
Achievement

- We can know whether the car in the straight or in the corner, by comparing the angle of two adjacent periods.

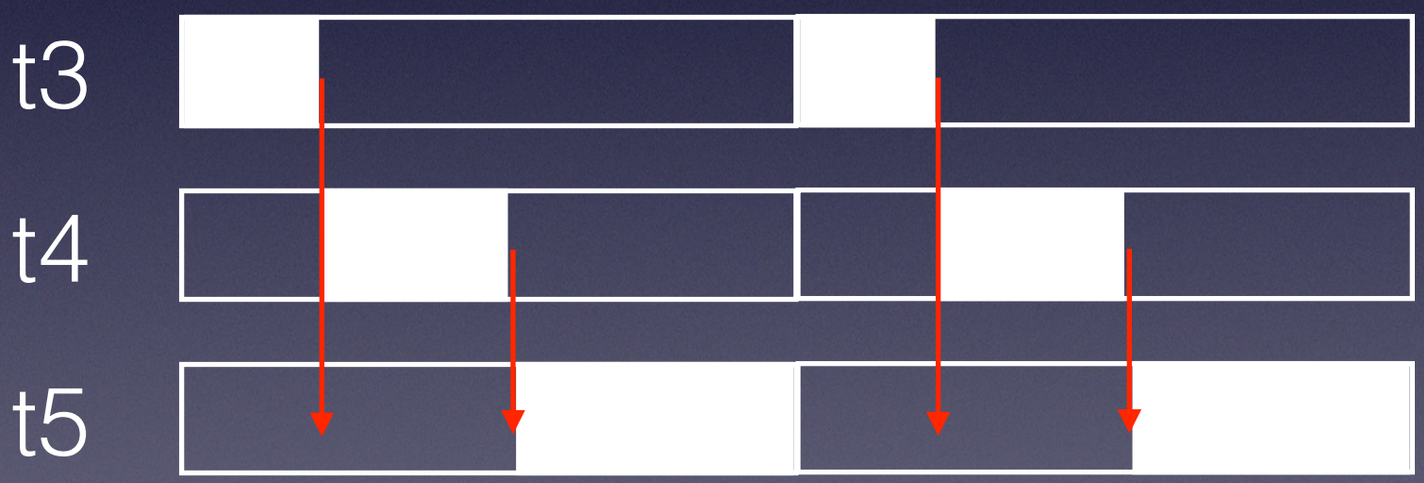
- Through the track curvature value, we can optimize the steering in the corner.

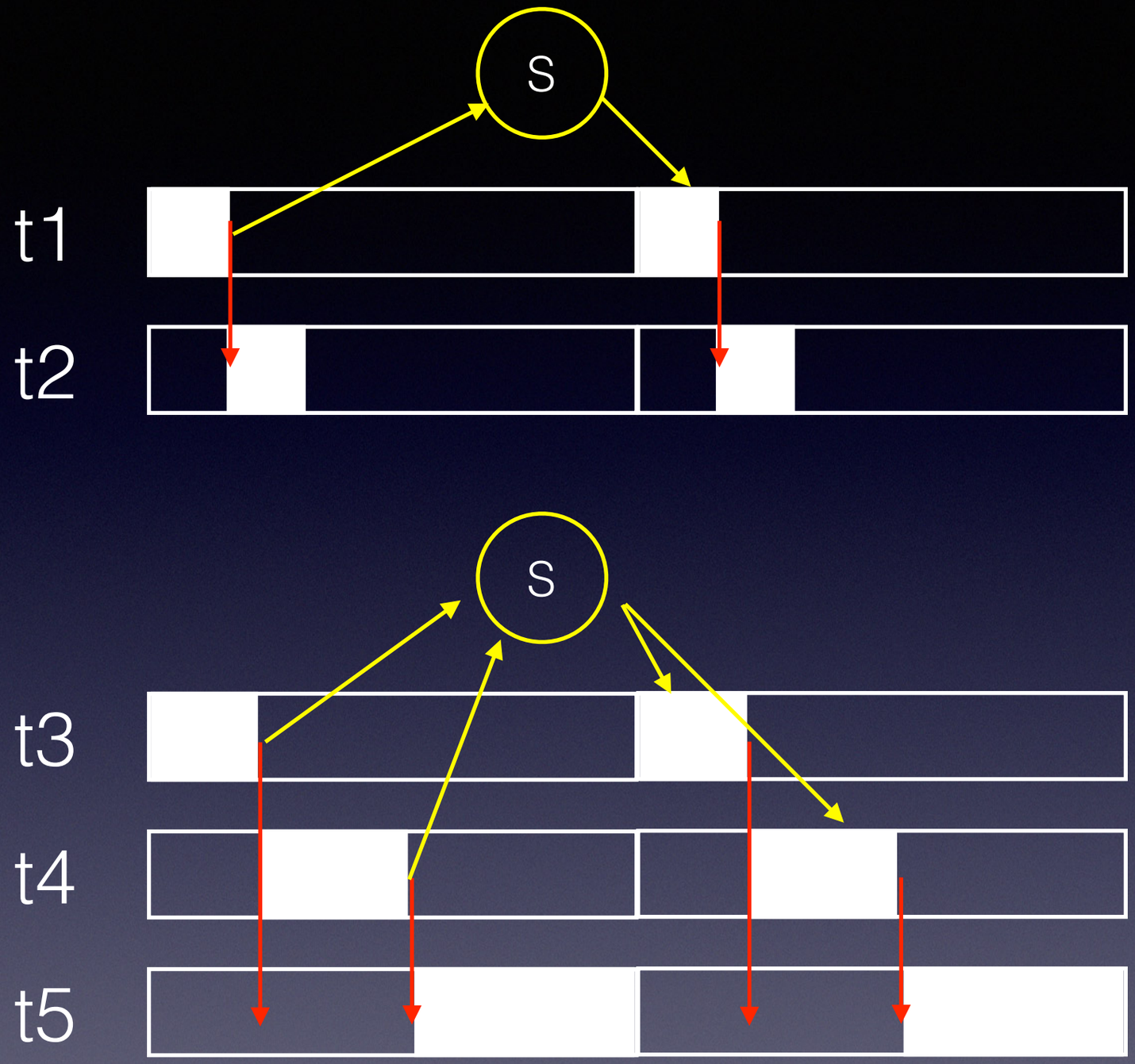
- Speed up in the straight, and slow down in the corner.

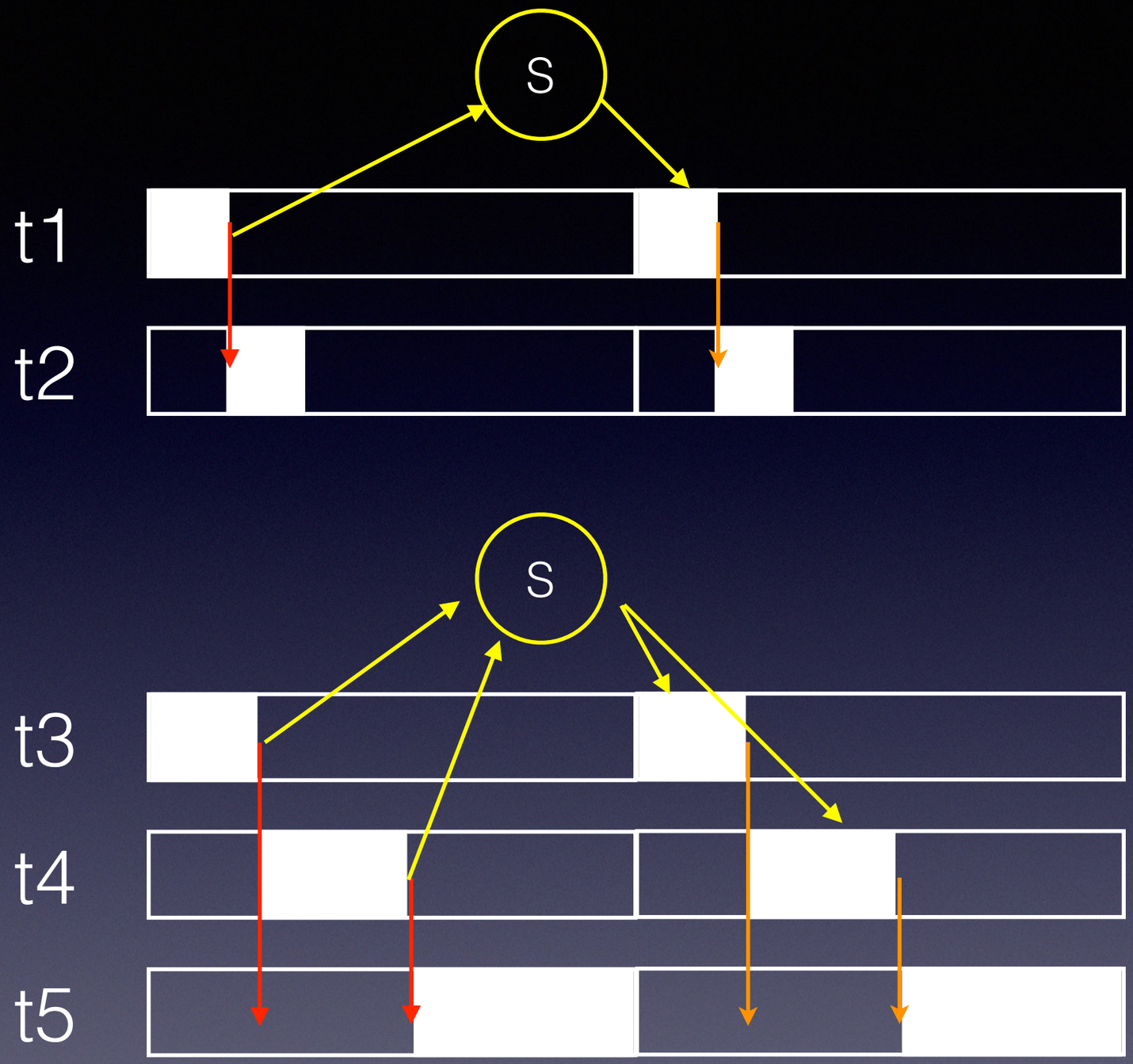
t1
t2


t3
t4
t5

t1
t2


t3
t4
t5


s
t1
t2
s
t3
t4
t5


s
t1
t2
s
t3
t4
t5

Future works

- Further tuning to achieve the best behavior.
- Predict the road ahead to react in advance.
- Take urgent measures in exceptional circumstances.

Thank you.

Q&A