CSCI 1108
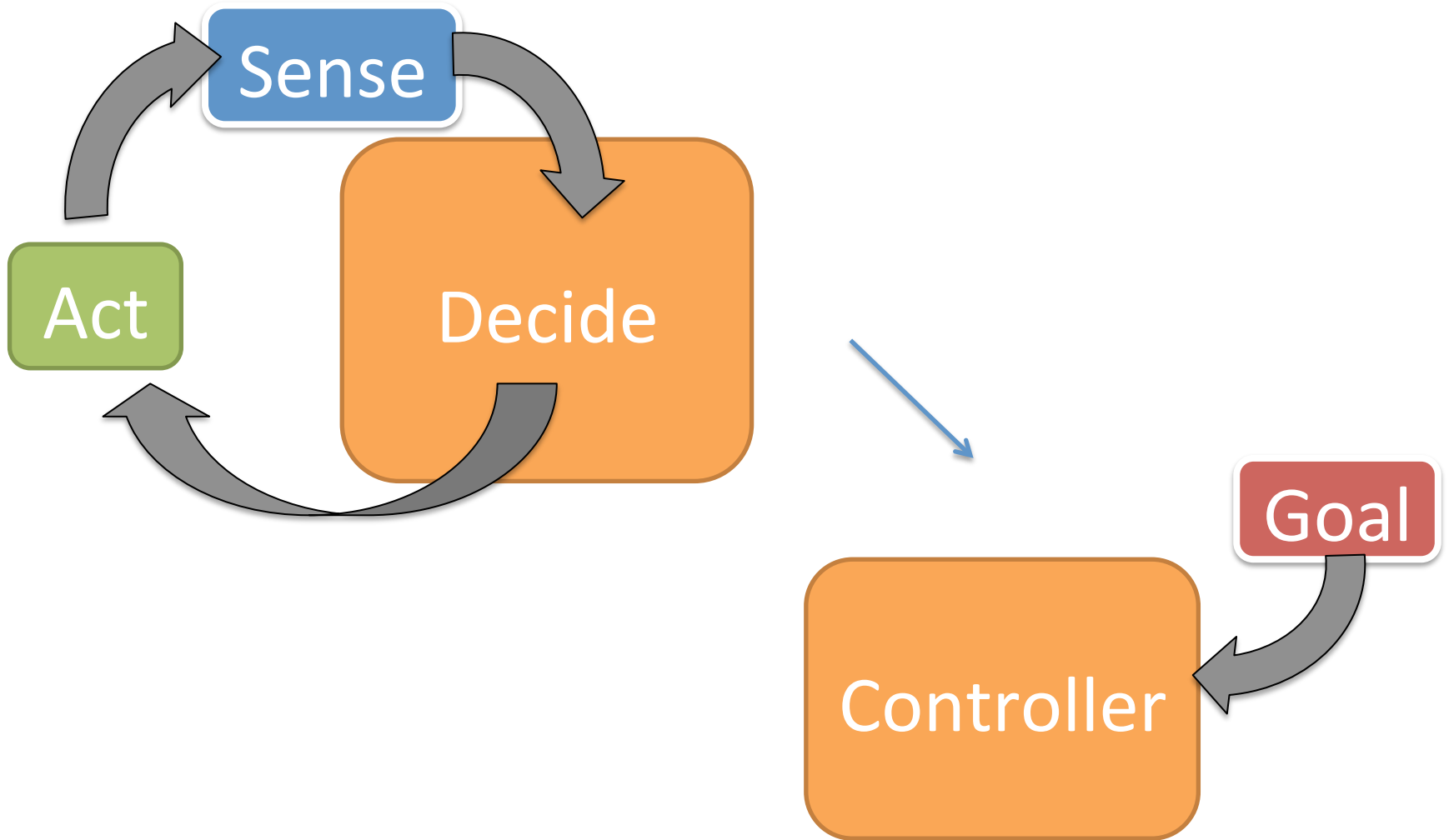# Review

The Sense-Decide-Act Loop

Sensor model

Characterizing sensors
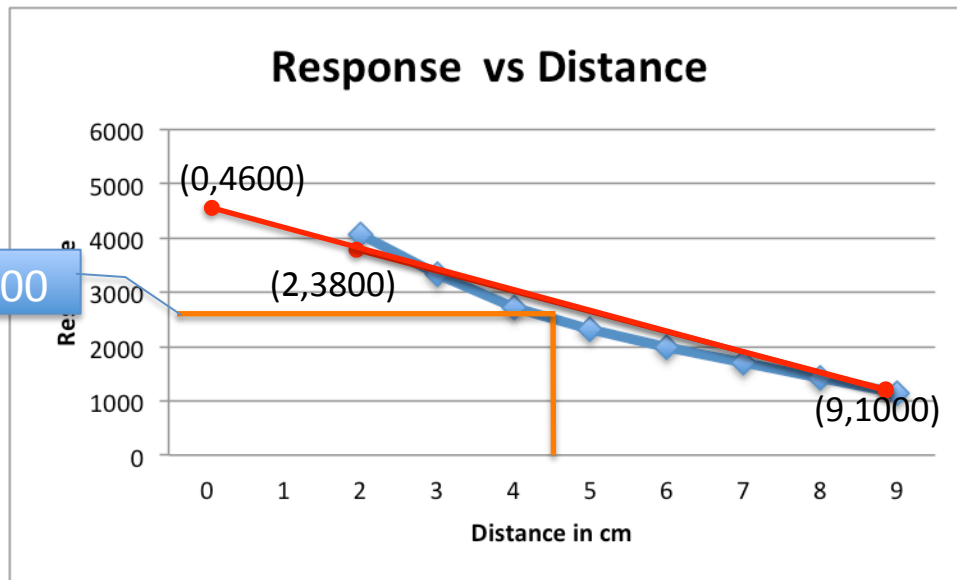

$$m = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1000 - 3800}{9 - 2} \cong -400$$

$$x = 2, y = 3800$$

$$y = mx + b \Rightarrow 3800 = -400 \times 2 + b$$
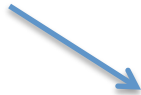
$$b = 4600$$

$$y = mx + b \quad \Longrightarrow \quad y = -400x + 4600$$

Sensors are not perfect

Motion model

Internal model: Calculate from motor commands (such as run the left motor for 2 seconds) the new position (pose)

Again need experiments to calibrate the parameterized model

Combining observations (sensors) and motion (actuators) models

Examples:

Odometry is the use of data from motion sensors to estimate change in position over time (Wikipedia)

Localization: More general techniques such as Kalman filter, and even SLAM

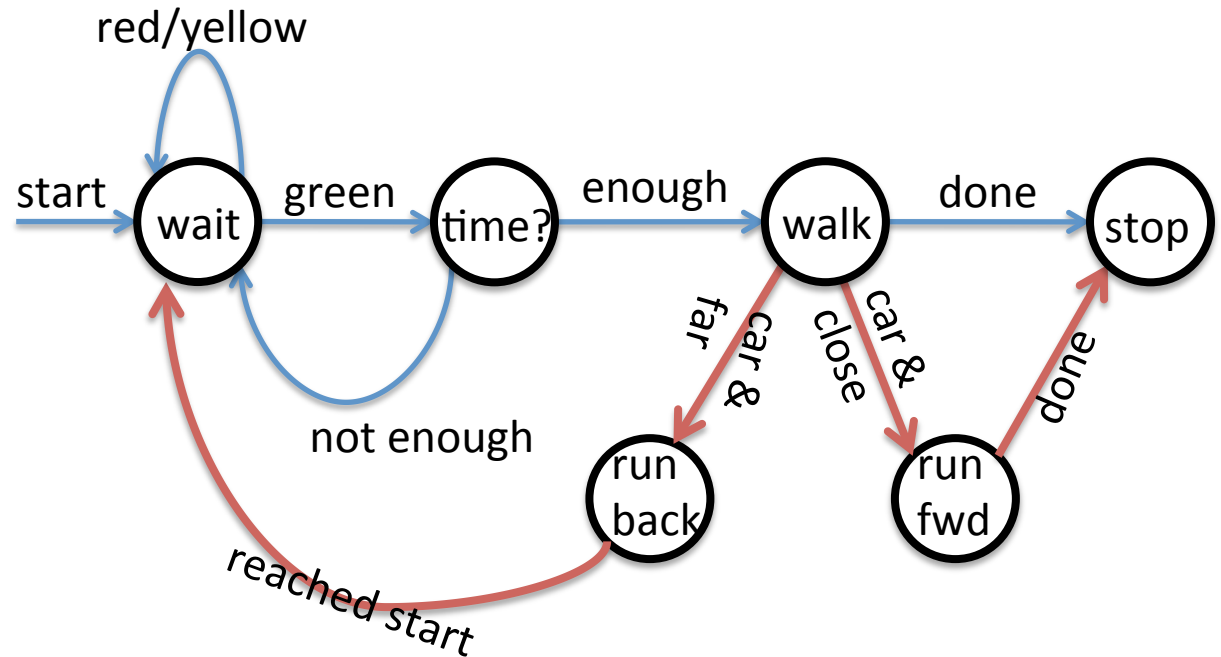# Programing in event-based framework with ASEBA

Event, Event handler,
basic constructs like variables and constants, loops, conditional
statements, lists, on event, subroutine

High level program planning:
State Transition Diagrams

What are states?
What are transition?
Why is this useful?

Failure of strategy and
Debugging errors in the code

Detection and mediation

Advanced topics

Search: Some search methods
Localization: Bayes localization versus point estimates
Object recognition: Pattern matching
PID: Set point, why is this useful?

Team Work and Project Management

Teaming
Gantt charts
Components in Project Management