## System model

### Inputs

* 2x laser range sensors VL53L0X
* 1x inertial measurement unit
  + Measurement of in-plane rotational speed from an angular rate (gyro) sensor
  + the components of the measured magnetic field along each of the 2 in-plane coordinate axes, which can be used as a compass for absolute orientation relative to Earth’s magnetic field

### Wish to measure

1. the distance to a wall in a straight line in front of the robot
2. the distance to a wall in a straight line to the right of the robot

### Outputs

### Mathematical Formulation

* State of the robot must satisfy the Markov property, capturing complete history of actuator inputs (and noise)
  + Computation of dynamics update
  + Sensor measurements
* State
  + Position
    - Relative to where we started
  + Rotation angle
    - Relative to magnetic north
  + Motion
    - {Forward, backward, left, right, stop}