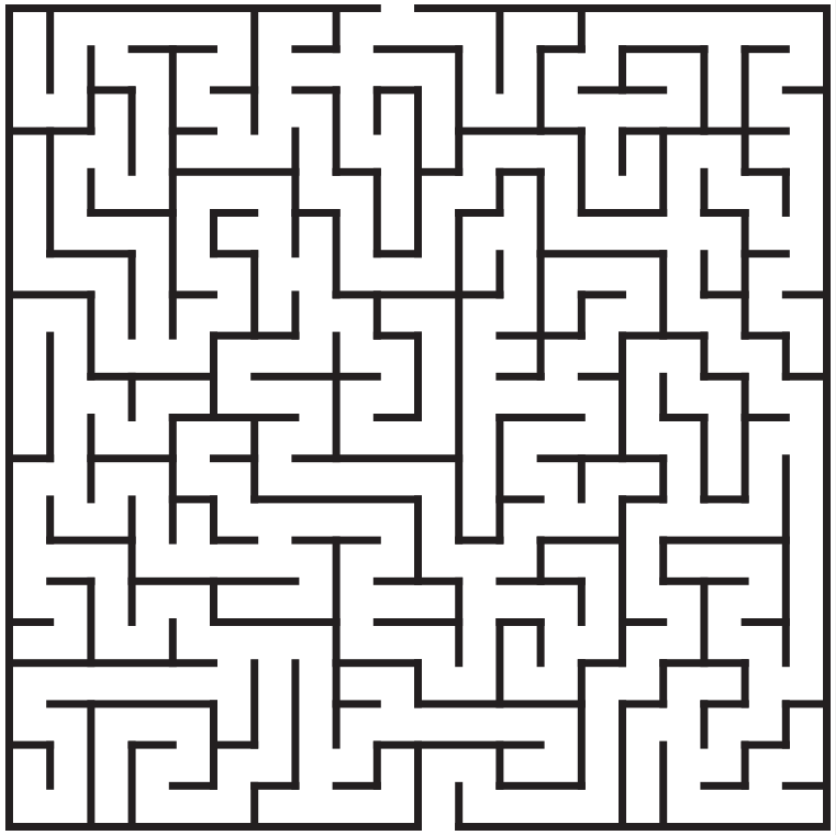
Computer Science Orientation

Lab1

Robots & Mazes



http://disney.wikia.com/wiki/WALL-E_(character)

https://www.wpclipart.com/recreation/games/maze/maze_square_medium.png.html

Lab Work

- Design the Robot
- Analyze the Problem
- Program the Robot
- Design and Implement a solution
- Work in teams
- Learn and have fun!!!

https://wwwsecure.us.lego.com/en-us/mindstorms/build-a-robot/ev3rstorm

In-Class Assignment

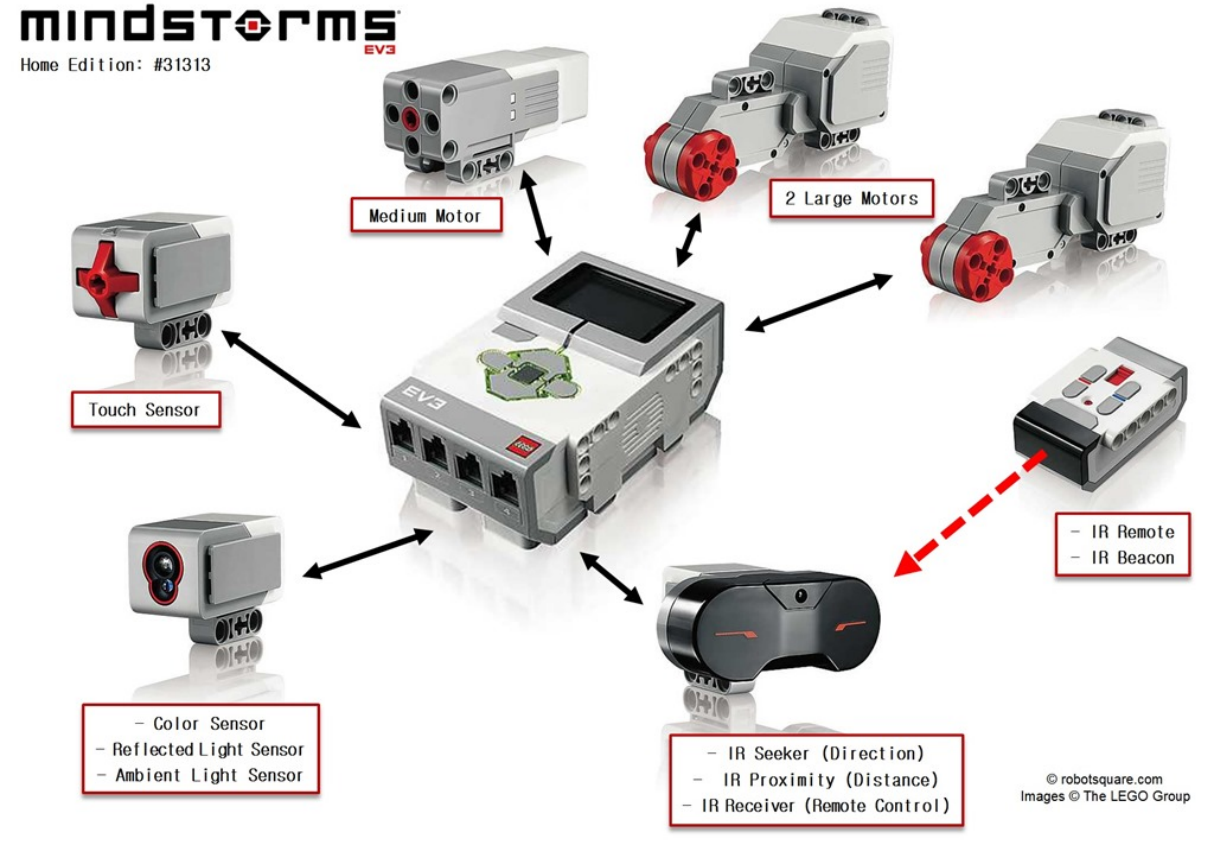
- Form a team of 5 people
- Pick a *temporary team leader*
- Choose your:

  TEAM NAME and ROBOT NAME

- Update the teams.html page
- If you are not familiar with Java please see the instructor.
- Work on the in-class assignments individually

Robot Time!!!

Each team has received a new Lego EV3 robot kit!



COLOR SENSOR

- Features:
  - Detection for up to seven colors
  - Detect the absence of color
  - it works in ambient light
- Applications:
  - Object detection
  - Line following
  - Detection of a normal or reflected light
  - Detect the light intensity

https://www.intorobotics.com/wp-content/uploads/2013/09/rsz_legoek_f9udjoijfoidgrt-0ih0tf0001.jpg

Infrared Sensor (IR)

- Features
  - 50-70 cm proximity measurements
  - Up to two meters working distance from the beacon
  - can receive IR remote commands
- Applications
  - Navigation
  - Surveillance
  - Target-acquisition

https://www.intorobotics.com/wp-content/uploads/2013/09/rsz_legoek_f9udjoijfoidgrt-0ih0tf0003.jpg

Touch Sensor

- Features
  - Cross-axle hole on button
- Applications
  - start/stop control systems
  - maze solving

https://www.intorobotics.com/wp-content/uploads/2013/09/rsz_legoek_f9udjoijfoidgrt-0ih0tf0005.jpg

Assignment

- Use the building instructions (or not) to build your first robot to be used in the next lab
- Your robot should be designed so that you can write an obstacle avoidance behavior and a line following behavior.
- One of each type of sensors must be attached.
- Work together with your team!
- Extra sensors available on request from our old NXT kits!

Install LeJOS

- Instructions for Windows and Mac OSX available on the website
- Lab computers (this room and TOMP 406) have necessary applications/drivers installed
- Install on your own computer and test the installation by writing your first Hello World on EV3

http://robotics.benedettelli.com/wp-content/uploads/2014/10/LEGO-wall-EV3-web.jpg