

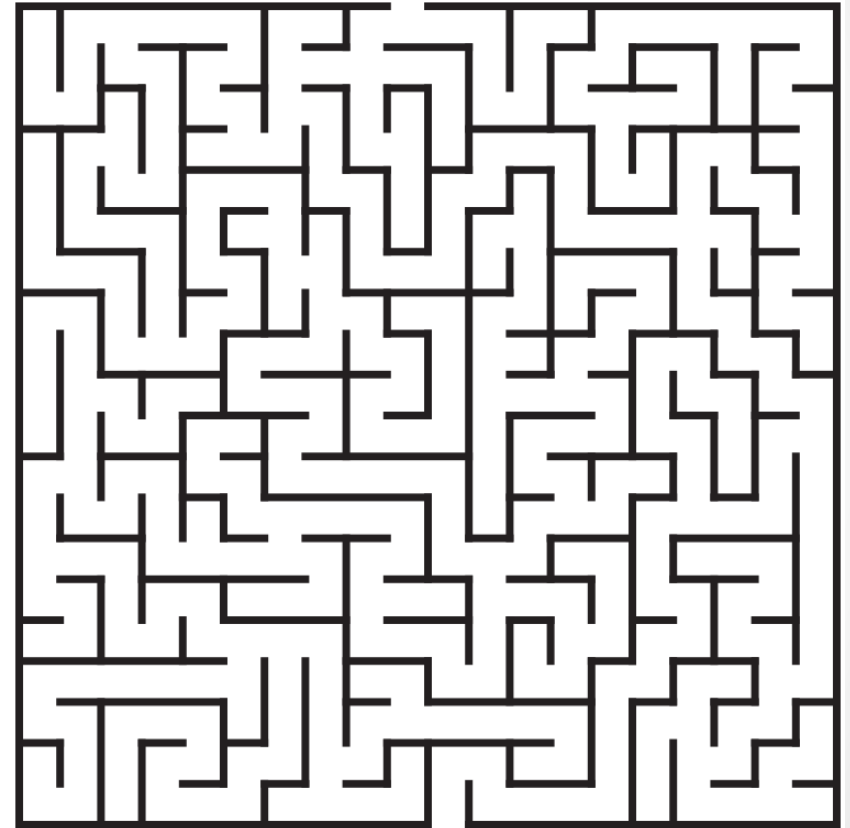
Computer Science Orientation

Lab1

Robots & Mazes



[http://disney.wikia.com/wiki/WALL-E_\(character\)](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://www.secure.us.lego.com/en-us/mindstorms/build-a-robot/ev3rstorm>

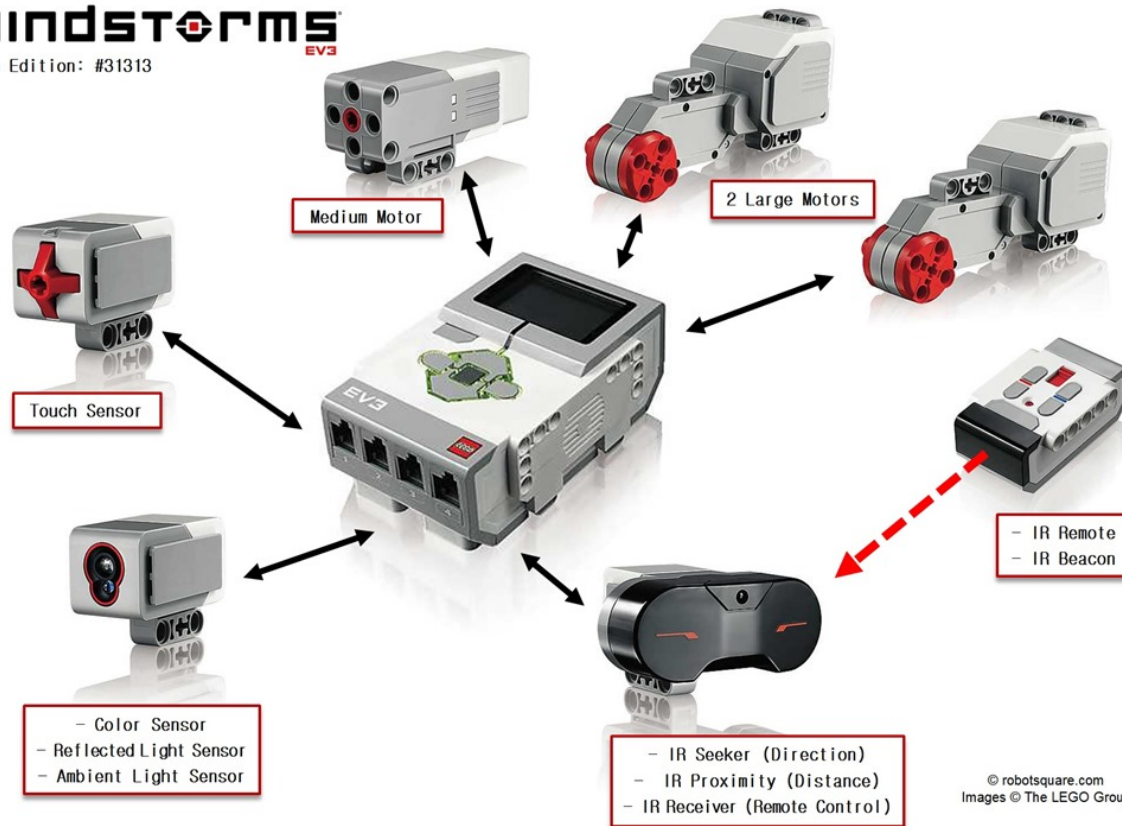
In-Class Assignment

- 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!

MINDSTORMS
EV3
Home Edition: #31313



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_f9udjoiifoidgrt-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_f9udjoiifoidgrt-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





DANNY'S LAB
WALL·EV3

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