

# CS 2951A Robots for Education

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# Structure

- ◆ Research and present 1 topic in educational robotics
- ◆ Implement 1 project:
  - ◆ new interface for educational robotics
  - ◆ document module for instructional project with interface
- ◆ Course page on [brown-robotics.org](http://brown-robotics.org) wiki
- ◆ Class meetings: 1 hour of presentation, 70 minutes project work

# PREOP

The screenshot displays the PREOP (Providing Robotic Experiences through Object-Oriented Programming) software interface. The main window is titled "PREOP: Providing robotic experiences through object-oriented programming".

**Left Panel (World Objects):** Lists objects in the simulation: world, camera, light, ground, and robot.

**Center Panel (Simulation):** Shows a 3D view of a green field with a yellow robot and a blue sky. Below the view are navigation arrows and a "100.0000" value.

**Right Panel (Events):** Contains a "create new event" button and two event triggers:

- When the world starts, do: world.myFirstMethod
- When Speed is typed, do: print robot.'s X position

**Bottom Panel (Code Editor):** Shows the code for the `world.robotWallFollow` method. The code includes:

- Initialization: `lastWallDirection = right`
- Event: `robot.'s left bumper is depressed` triggers `lastWallDirection = set value to left`.
- Else: `lastWallDirection = set value to right`.
- Logic: `Move backwards slightly to avoid object being.`, `print Wall detected, backing up .1.`, `robot.'s move backward .01`.
- Decision: `Using lastWallDirection determine which direction we need to turn to get away from the wall.`
- Implementation: `lastWallDirection = left` triggers `print Turning right to avoid wall on my left.` and `robot.'s turn right .05 revolutions`. The Else branch triggers `print Turning left to avoid wall on my right.` and `robot.'s turn left .05 revolutions`.

**Bottom-Left Panel (robot's details):** Lists methods for the robot:

- robot.'s move
- robot.'s turn
- robot.'s play note
- robot.'s play song
- robot.'s move at speed
- robot.'s turn at speed
- robot.'s zero X,Y, and Theta

**Bottom-Right Panel (Create note dialog):** A dialog box for creating a note with the following settings:

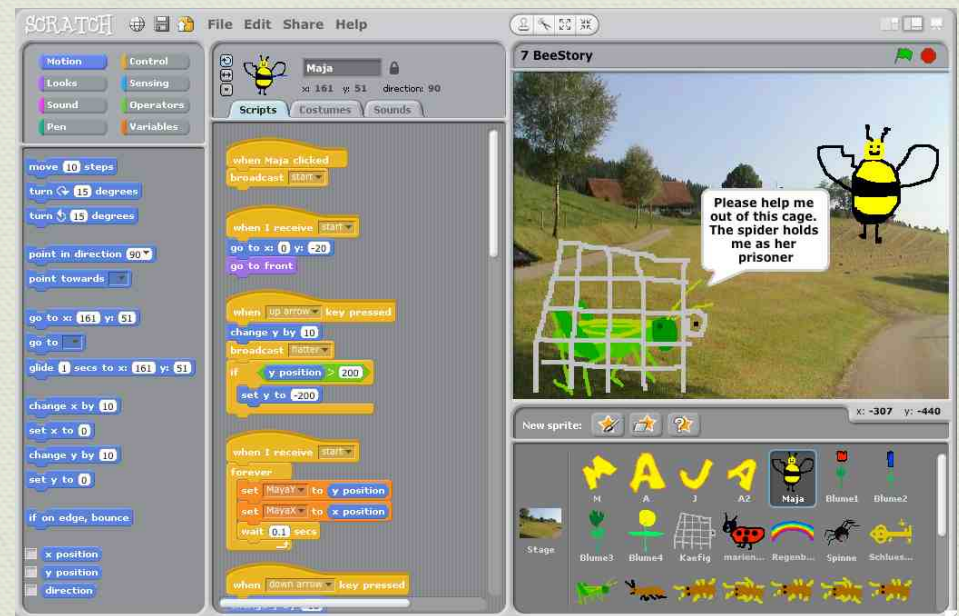
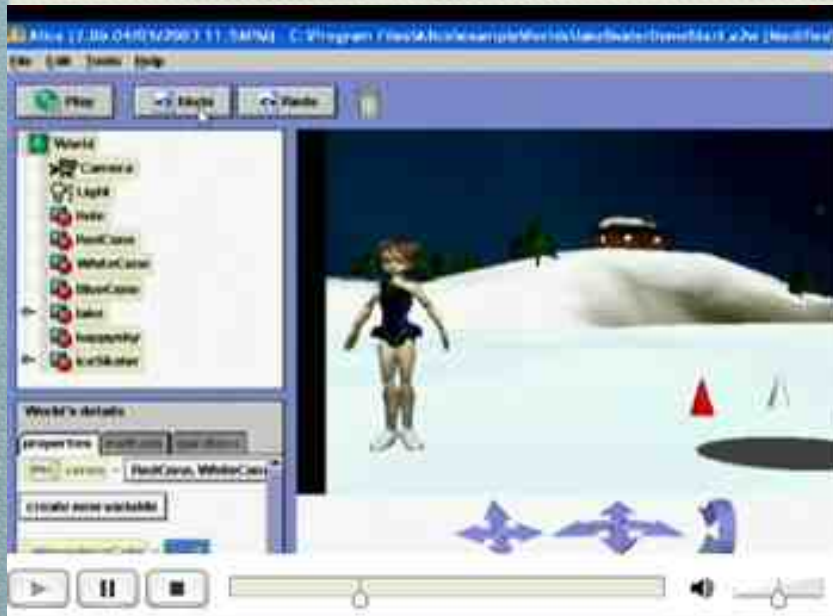
- Duration: 0.5
- Notes per minute: 60
- Length of note (in beats): 10
- Plus: 1
- Pitch: B (8), A# (7), A (7), G# (6), G (6), F# (5), F (5), E (4), D# (3), D (3), C# (2), C (2)

**Bottom Panel (Execution Controls):** Includes buttons for "Do in order", "Do together", "If/Else", "Loop", "While", "For all in order", "For all together", "Wait", and "print".

# Visual Programming

Alice

Scratch



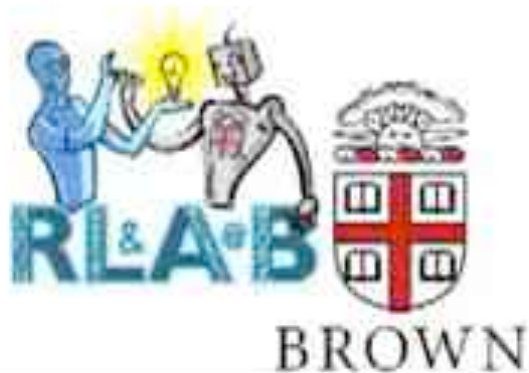
# Tangible Programming



# PR2 Remote Lab

## Robots As Web Services:

Reproducible Experimentation  
and Application Development



# ROS / JavaScript



BROWN



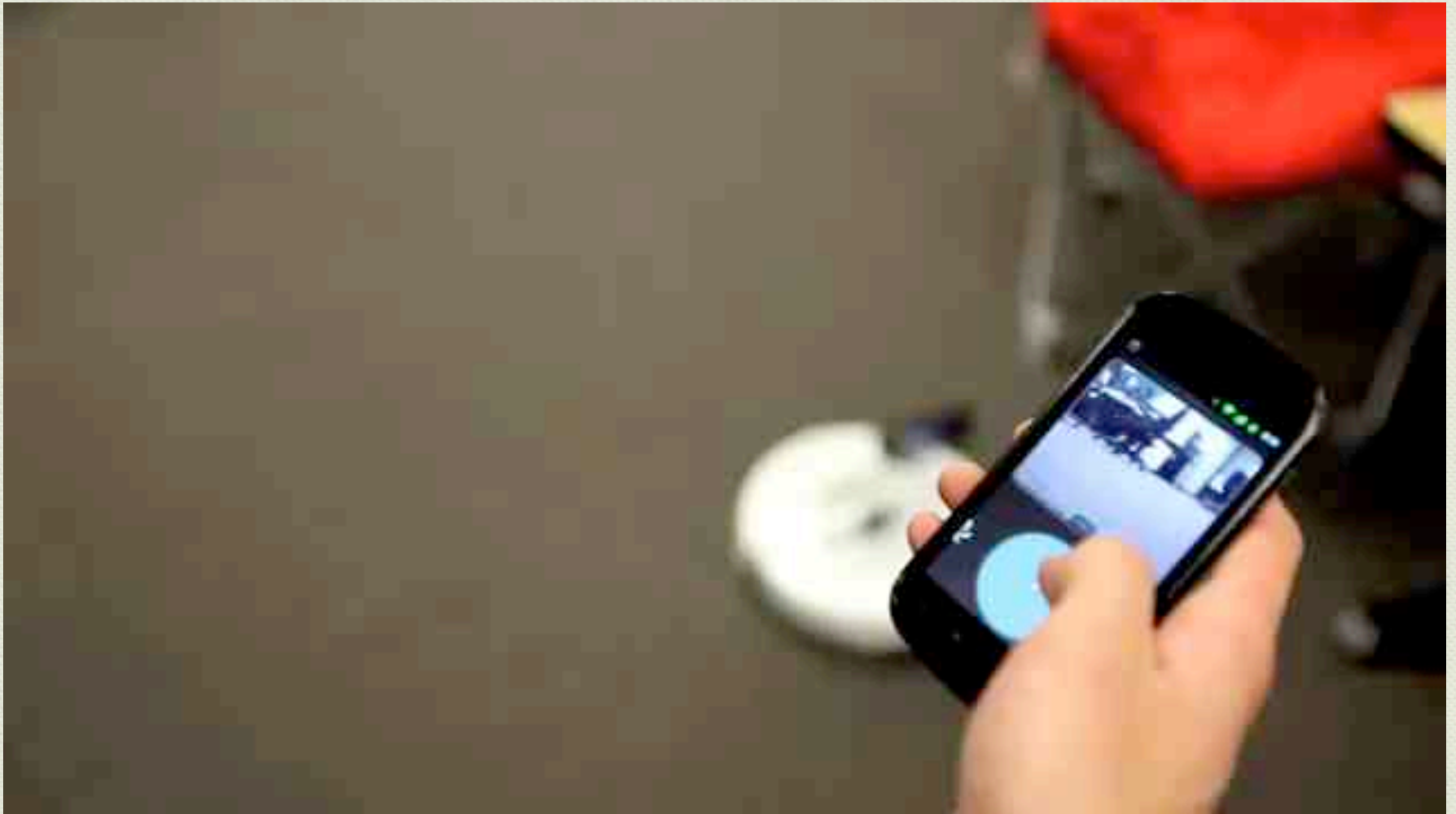
**BOSCH**

# IPRE

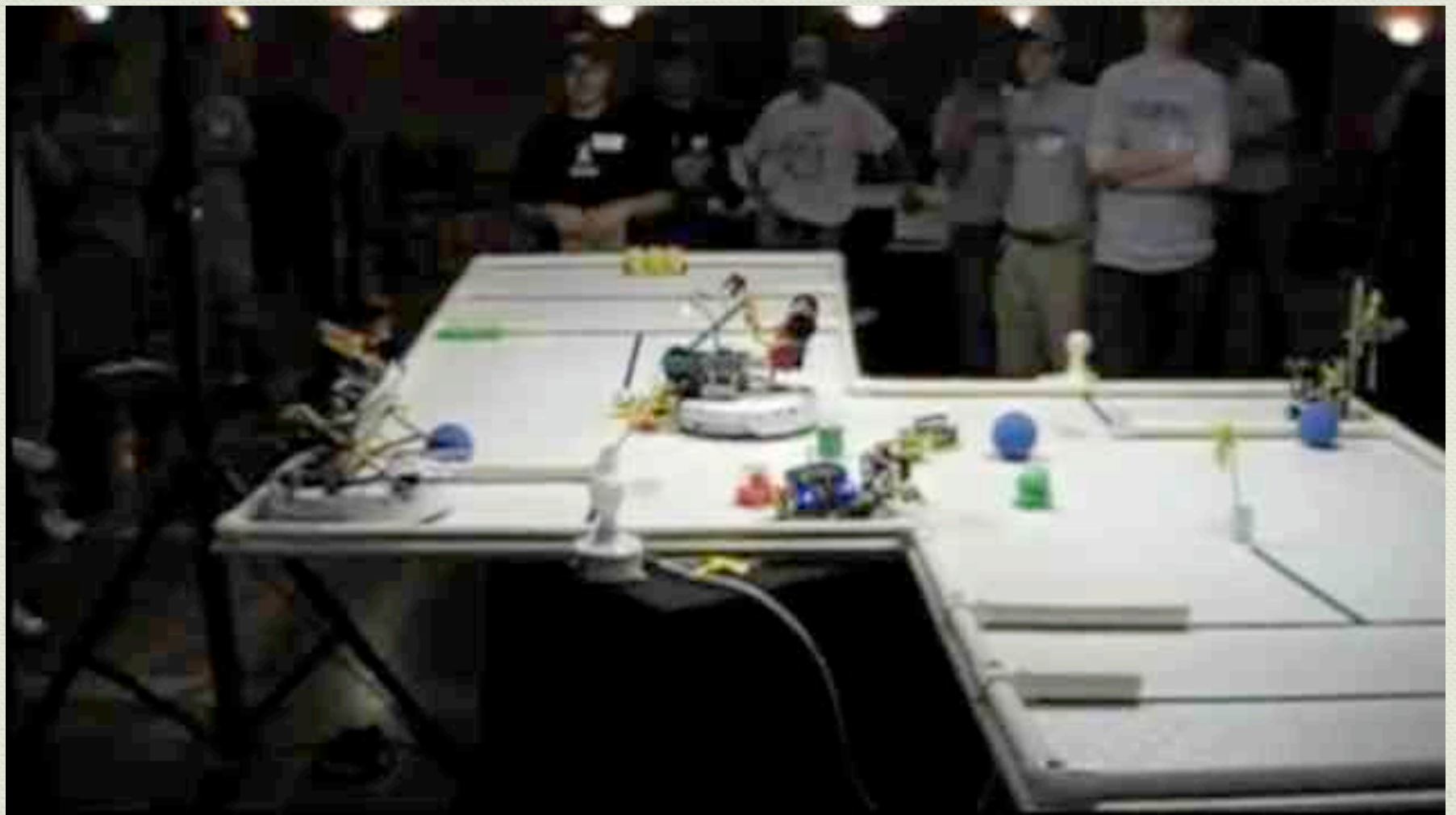




# Cellbots



# Botball



# FIRST Lego League

