The robot_blockly package: programming ROS with blocks

Erle Robotics
Alejandro Hernández
What is Scratch?

Scratch is a visual programming language

Scratch was created in 2003 as an educational programming language by MIT that allows learning to program using blocks.

Scratch is primarily designed for 8 to 16 year olds, it is also used by people of all ages, including younger children with their parents.
Blockly

Language: JavaScript

```javascript
var Count;

Count = 1;
while (Count <= 3) {
    window.alert('Hello World!');
    Count = Count + 1;
}
```

https://github.com/google/blockly
“We shouldn’t think about young people as digital natives”
Young people have a lot experience at interacting with new technologies but lot less at creating and expressing themselves with new technologies.

Mitch Resnick
... it’s almost as if they could read but not write

Mitch Resnick
The third language

Should Computer Coding Be Considered A Foreign Language in School? Some Say Yes

by ALLISON SLATER TATE

Why Estonia Has Started Teaching Its First-Graders To Code

Parmy Olson, FORBES STAFF

I cover agitators and innovators in mobile.
FULL BIO

New York Mayor Michael Bloomberg takes coding course

New York Mayor Michael Bloomberg has resolved to take an online computer coding course.

The mayor is joining more than 180,000 people currently taking part in Code Year, a campaign to encourage more people to programme.

"My New Year's resolution is to learn to code with Codecademy in 2012," he
By using **scratch**, people are able to become **fluent with new technologies**..., they are able to express their ideas with them by **programming**.

Mitch Resnick
robot_blockly

https://github.com/erlerobot/robot_blockly
Architecture

Client-side

Network

Backend

Logic

Blocks

Generators
Architecture

Client-side

Network

Feedback

Backend

Logic

Blocks

Generators
Create custom blocks

**Definition**

**Language code**

**Generator**

**Preview**
Recommendations

Use `rospy.wait_for_message()` Be sure that you have received the data from a publisher in the code block.

Check if the ROS packages are launched

```python
import rospy
import subprocess
import rorosnode
import rospkg
from sensor_msgs.msg import Range
ros_nodes = rorosnode.get_node_names()
if not '/lrm30_node' in ros_nodes:
    rospack = rospkg.RosPack()
    command = rospack.get_path('lrm30_ros').replace('share', 'lib') + '/lrm30'
    process = subprocess.Popen(command, shell=True, stdout=subprocess.PIPE)
msg_laser = rospy.wait_for_message('/lrm30_data', Range, timeout=1)
```
repeat while true
  do
    Find path path_angle = 135
    do
      if
        set R_Deg to 135
      then
        Turn Right R_Deg degrees
      else
        set L_Deg to path_angle
      end if
    end do
    Walk Forward 30 degrees
  end do
Conclusions

- This kind of package makes easy how to teach robotics
- Makes accessible robotics without “programming skills”
- Labview or Simulink are not easily extensible
- Companies using robot_blockly
- Open Source GPLv3
Ready to jump into robotics?