API DESIGN
&
PROJECT MODULES

part of ROS from Scratch
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OVERVIEW

- Designing an API for middle schoolers
- Additional features to consider in the future
- Developing lessons based on programming with robots
- What can be added to make better teaching tools
DESIGNING AN API FOR MIDDLE SCHOOLERS

- Fit the existing programming model
  - Motors forward v. Motors forward for X seconds
- Expose building blocks that are extremely simple
- Provide context and understandable units
  - percent of full power for motors
ADDITIONAL FEATURES TO CONSIDER IN THE FUTURE

- Build ways to automatically calibrate and define ranges for light sensors
- Label the scale for all motor control blocks
- Expose more dimensions of sensor data
  - ARTags
  - Separate bump sensors
- Move the robot control blocks into their own category
DEVELOPING LESSONS BASED ON PROGRAMMING WITH ROBOTS

- Introduce Scratch and basic motion of the Robot and Cat
- Teach students basic Sensing and Conditional statements
  - Variables and Numeric + Boolean operations included
- Expand on Control Structures and talk about Loops
- Give students larger assignments like Line Following and Enclosure Escape
The modules developed are in no way stand alone lessons but rather a curriculum plan that provides a backbone for teachers to build on.

**Necessary Additions:**

- Assessment models and criteria
- Extensive teacher resources including trouble shooting support
- Reference material for students
http://code.google.com/p/brown-ros-pkg/wiki/ROSScratchProjectModules