



## TBot

<http://onerobot.org>

TBot is the first easy to use robot that's programmable over wireless, can speak and react to sounds, drives precisely yet quickly, can sense its environment and communicates with others to form swarms.

TBot makes learning fun- explore math, science and computers in a hands-on manner. Out of the box, TBot can be used by kindergartners to university students but is easily customized for a variety of competitions.

Programming TBot is easy: drag and drop blocks then load via wireless or USB. Advanced users can choose from over 100 languages including Basic, C, Forth and Assembly. Arduino fans can program the TBot using familiar AVR tools.

TBot includes powerful sensors, wireless capability and encoder-controlled motors to ensure success.

## Learning with TBot

Primary-age kids love to learn in a hands-on environment. Here are some of the things to learn from TBot:

- ⤴ Sensors and Actuators: sounds, lights, motors
- ⤴ Robotics: choreograph robot to music, obstacle avoidance, maze
- ⤴ Data: measure distance, sounds, other sensors
- ⤴ Computer: program visually with blocks

High school are ready for more advanced concepts- like sensors and wireless communication:

- ⤴ Math: geometric shapes, algebra equations, calculus, number theory
- ⤴ Science: scientific method with testable hypothesis
- ⤴ Computer: object oriented programming, c, multicore, wireless, sensors

TBot is a flexible robot platform for advanced projects:

- ⤴ Control systems: proportion/derivative/integral controller
- ⤴ Color theory
- ⤴ Swarm behavior
- ⤴ Cooperative behavior with shared memory
- ⤴ Embedded system
- ⤴ Parallel programming

## TBot- Ready for Competitions

TBot is a proven competitor- here is a sampling of events it excels at:

- ⤴ High speed line follower
- ⤴ State-machine controlled Sumobot
- ⤴ Tabletop soccer teams
- ⤴ Swarm behavior
- ⤴ Draw patterns via remote control
- ⤴ React to sounds
- ⤴ Speak with speech synthesis
- ⤴ Color theory with full-color LED
- ⤴ Micromouse, Firefighter

## FEATURES

### Easy to program

Easily programmable with drag-n-drop visual environment or over 100 text languages including C, Basic and Assembly.

### Part of “Robots in Classrooms” Curriculum

Comes with free open-source curriculum to quickly get started in the classroom.

### Powered by both Propeller and AVR

TBot combines today's coolest microcontrollers- the Propeller and AVR- giving you access to a huge library of existing projects.

### Open Source and Multi Platform

TBot is open-source and it's software is available on Windows/Mac/Linux.

### Program, Control and Debug remotely over Wireless or USB

Choose from USB or Xbee to communicate with TBot

### Advanced Communication Capabilities

Multiple TBot's can share a common memory to share sensor values and program states. TBot's can also message each other or communicate using terminal sessions.

### Comprehensive Sensors: Proximity, Audio, Line, Encoder, IR, Buttons

Measure distance to objects in front and sides of TBot. Measure position and orientation of TBot using wheel encoders and detect floor markings with light sensors. React to sounds with microphone or button push. Use expansion port for other devices.

### Actuators: Geared Motors, Full-color LED, Speaker, IR

High speed geared motors drive TBot at running pace. Program LED to flash any color. Output sounds, music or speech from the speaker. Control other items with IR. Use expansion port for optional devices.

### Flexible expansion port

Add sensors/actuators with Expansion port- with power, 6 high speed digital and 2 analog input/outputs. Compatible with Mindstorm parts.

### Easily expandable

Compatible with Vex, Meccano and Lego parts- simply screw or push on.

### Advanced power system

Power is regulated to drive and turn consistently regardless of battery state. Optional lithium battery chargeable by USB cable.

### Made in America

Frame, electronics and software proudly made in America.

### Technology

Processors: Parallax Propeller and AVR XMEGA

Sensors: 5 line detectors and 6 proximity sensors

IR transceiver

Geared motors with encoders

Amplified speaker with speech synthesis

Microphone

Programmable over USB or optional wireless

Can communicate with each other to form swarms

Full-color LED, 2 user switches, status LEDs

10 pin expansion port with 6 hi-speed digital and 2 analog

Optional lithium battery can be charged via USB

Easily programmable with drag and drop by 12Blocks

Metal platform is compatible with Meccano, Vex and Lego parts

Dual switching regulators run from 4AA or 1 Lithium battery

Assemble in 5 minutes- no soldering required

4" diameter base with 2 3/4" wheels