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# Flowstone, a New Graphical Programming Language, Presages Future of Robotics

The world of single-board computers and embedded microprocessors is evolving daily and it's easy to focus on the hardware without considering the changes in the software tools available to program our creations. One hardware area that is growing right now is the use of mini single board PCs for robotics applications, some of which are now the size of cigarette packets (consider DARwIn-OP our cover story).

One software tool that has emerged recently is 'FlowStone' a graphical programming language for Windows from UK-based DSPRobotics. FlowStone has been specifically designed to work on PCs, Laptops and this new breed of small single board computers. The advantages of using a single board PC are that your software gets access, with little programming, to all of the standard PC peripherals, like keyboard, screen and mouse, plus networking, the sound system and video, etc.

PRIMITIVES & MODULES
The key to using FlowStone is the graphical nature of the development environment; on the screen you can create your program by interconnecting primitives and modules using flexible wires. Primitives are things that are at the lowest level and cannot be edited, such as mathematical functions, or a comport or a webcam, etc. Modules are collections of primitives or other modules and can be viewed at a high level or you can double click and step inside the module to edit it.

Both Primitives and Modules have inputs and outputs, which is where you connect the interconnection wires. A powerful feature is automatic conversion, so you don't have to worry if you connect a
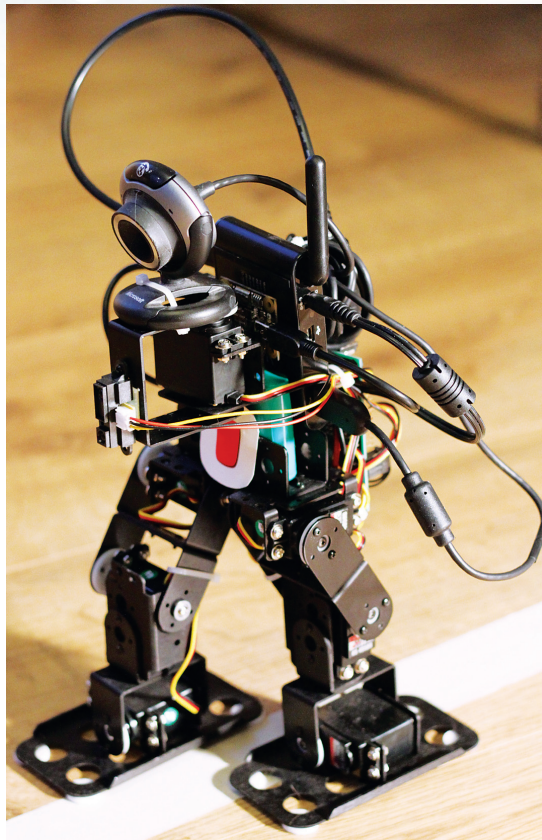
This Lynxmotion BRAT has been equipped with a Webcam and the ability to engage in laser combat; stay tuned for a full report next issue!
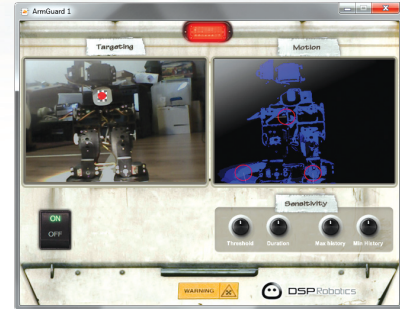
A birds eye view as the BRAT's nemesis takes aim.

Floating Point output to a Sting input—the conversion happens automatically. There are hundreds of pre-built modules available at this time in the DSPRobotics libraries.

To program runs, you have two options: 1) In the Development Environment or 2) to make a stand alone EXE file. When you are building your application in the development environment, your program is already running. This means that you don't need to compile your code to test it, which in turn means that you can usually catch bugs as you make them, as you see the results instantly. Once you are happy with your program you can then make a stand alone EXE file in a single click. FlowStone is very powerful when it comes to audio Digital Signal Processing (DSP) and can process many complex DSP function like FFTs, Oscilloscopes & Filters, etc. There are also prebuilt modules for video cams with motion and color detection and more. FlowStone has a powerful GUI system, allowing you to give your application the look and interaction you want. There are pre made buttons, LEDs, sliders, switches etc. all of which are customizable.

We asked the folks at DSPRobotics about their plans for the future.

Already FlowStone can record and play audio and video and has full networking with TCP and UDP, plus things like X10 Home Automation protocols etc. "Our main goal it to make FlowStone compatible with as many different hardware products as possible, already the list is long including Phidgets, LynxMotion, KTronics, LabJack, Pololu, Robot Electronics, plus any board that uses RS232 or TCP, not to mention all of the PC peripherals like web cams, IP CCTV, Sound cards, touch screens etc." says Carl Owen Sales Director for DSPRobotics. DSPRobotics has also released the new FlowBoard DAQ that is specifically designed to work with FlowStone and a new Embedded PC development system. Learn more next issue when we bring you an implementation that has the Lynxmotion BRAT in a laser war with an alien.

—Tom Atwood ◎
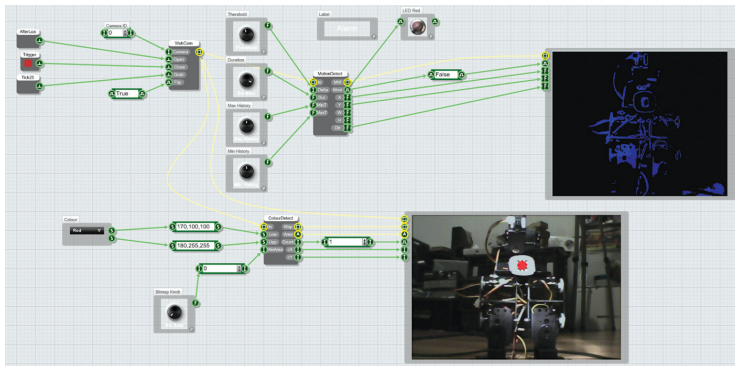
Note the Flowstone graphical display of the programming setup for the enemy alien's weapon tracking system—BRAT beware.