

.NET Gadgeteer Workshop

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.NET Gadgeteer is a platform for creating your own electronic devices using a wide variety of hardware modules and a powerful programming environment [1]. Students with little or no Computing background can build devices made up of components that sense and react to its environment using switches, displays, motor controllers, and more. Components are plugged into a mainboard and programmed to make them work together³.

Microsoft Research has launched .NET Gadgeteer as open source software/hardware, and .NET Gadgeteer kits are now available from a variety of hardware vendors. Gadgets can be constructed by connecting the modules with cables, then programming the events triggered when using the device using Visual Studio. Either Visual Basic or Visual C# can be used.

.NET Gadgeteer has great potential in schools due to the fact that it can be used to teach students computer programming, simple electronics and also some computer-aided design. It is also very motivating for young people to be able to build their own gadgets. A digital camera can be built in about half an hour! Other devices that students can learn to build are a stop watch, traffic lights, various games, a temperature logger and a music player. The possibilities are endless! Through using .NET Gadgeteer, students learn about handling events, and are introduced to key programming concepts that are taught in schools including selection, iteration, arrays and functions.

We have held pilots in schools in the UK and the USA and students have been very motivated by the opportunity to create physical devices. Students work in groups and enjoy the opportunity to be creative as well as learning to program [2]. In this hands-on workshop, we will demonstrate .NET Gadgeteer and a variety of modules that are available. Participants will have the opportunity to build and program a small gadget or device of their own, using a range of modules and Visual Basic .NET.

References

1. Hodges, S., Villar, N., Scott, J., Schmidt, A.: A New Era for Ubicomp Development. *IEEE Pervasive Computing* **11**(1) (2012)
2. Sentance, S., Schwiderski-Grosche, S.: Challenge and Creativity: Students Experiences of .NET Gadgeteer. In: *Proceedings of the 7th Workshop in Primary and Secondary Computing Education* (2012)

³ <http://www.netmf.com/gadgeteer>