

Mathematica 10

Ben Everard wonders whether the new version of Mathematica is more intelligent than he is. Mathematica knows but won't tell him.

It's a little hard to say exactly what *Mathematica* is. It's a programming language, IDE, data source, natural language processing toolkit, equation solver and data visualiser all wrapped up into one piece of software. If you want to do something, and it involves data, *Mathematica* can probably do it.

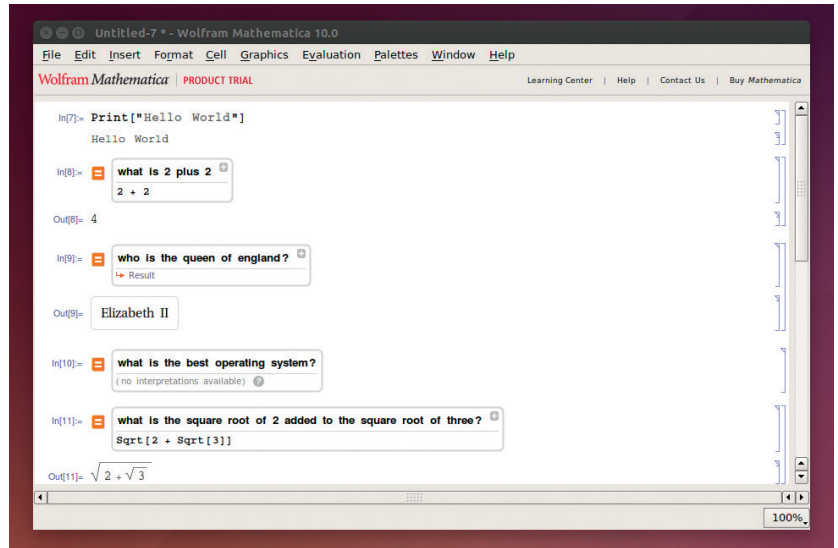
Prices start at £195 + VAT for an individual (or £80 for students), but quickly rise if you want more advanced features (including technical support). The top level costs £5,695 and includes (among other things) support for up to 16 processing cores, phone support, upgrades, *Wolfram Workbench* and *WebMathematica Amateur*.

That's quite a lot of money, but there is a one-month free trial available to help you find out if *Mathematica* suits your needs. Be warned, though, the trial version is crippled to the point that most of the example code on the *Mathematica* website won't run. The trial will also give you access to the Wolfram Cloud (<https://programming.wolframcloud.com/app>), which is able to run most things, but the trial account is limited there as well, and some of the more processor-intensive tasks exceed the trial limits.

Version 10 brings three new areas to *Mathematica*: machine learning, geographic computation and geometric computation, as well as improvements in just about every area, including many in the Connected Device Framework. There's a list of new features at <http://reference.wolfram.com/language/guide/SummaryOfNewFeaturesIn100.html>.

Geographic computation is largely based on geovisualisation, which is just a fancy word for colouring in maps. This is something that's becoming increasingly popular as a method of visualising data. The integration of the map data and the graphing functions with the language are make the new version of *Mathematica* probably the easiest tool to do this available today.

The best feature of the new machine learning area is its ease of use. *Mathematica* can handle almost all of the algorithm selection and configuration – tasks




As well as its own programming language, *Mathematica* can take input in normal English.

that can take experience to get right if you have to do them manually – leaving the user with just the task of linking in the data set.

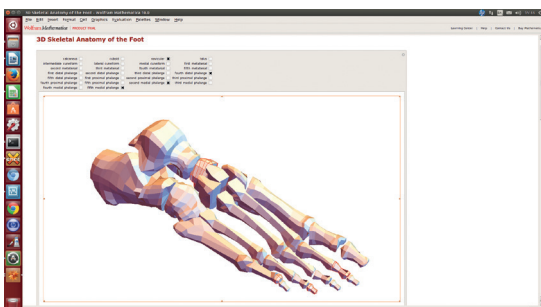
Enormous data processing power

The Connected Device Framework has also seen some improvements. This is the toolset that's designed to bring data from external sensors into *Mathematica* so that you can analyse it, and Wolfram is targeting this at hobbyists with example code for Arduino. Although this is very powerful, most sensor data is quite simple, and analysing it in *Mathematica* would be like using a sledgehammer to crack a nut. It's very rare to need this level of processing power outside of industrial settings.

We're pleased to see improved testing libraries in version 10. These are part of a push from Wolfram to make *Mathematica* a more attractive environment for software engineering, and are something that's been lacking in previous versions.

Mathematica is a uniquely powerful piece of software that, when used well, can help you perform incredibly powerful computations very easily. However, the price of using it is tying your work up with proprietary software. While we do use closed source software, we're uncomfortable with the idea of intertwining our programming this closely with software that we can't control. 

DATA
Web www.wolfram.com/mathematica
Developer Wolfram Research
Price £195 +



The new tools in geovisualisation and machine learning are especially exciting, and incredibly easy to use.

LINUX VOICE VERDICT
 Very powerful and easy to use, but hampered by a lack of freedom.
 ★★★★★