

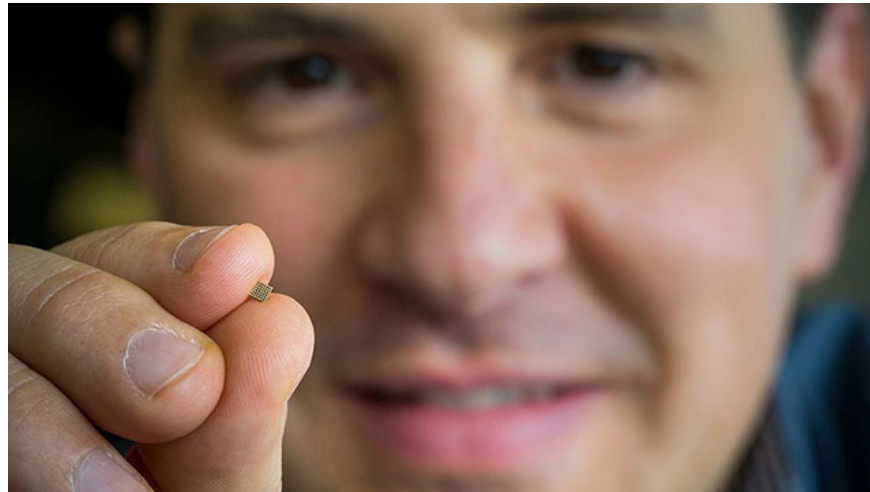
Microsoft plans to bring AI into Raspberry Pi

Artificial intelligence (AI) and Machine Learning often work more effectively when backed by data processing tools, calculating capabilities and immediately giving the best solution.

That's why the AI system relies on local sensors to collect input data while more powerful hardware on the cloud manages the heavy part of the output data. That's how Siri and Amazon Alexa work, how IBM Watson solves almost any job. However, it is still a limited approach to creating smarter IoT and intelligence applications without an Internet connection.

'The main model is that these devices (sensors) are useless,' said senior researcher at Microsoft Research India, Manil Varma.

Currently, Varma's team in India and Microsoft researchers in Redmond, Washington (the whole project led by researcher Ofer Dekel) has discovered how to compress the neural network, the synapses of Machine Learning from 32-bit down, sometimes, there's only a bit left and running them on a \$ 10 Raspberry Pi, a small computer the size of a card, costs less power with more ports and no screens. It is really an open source motherboard that can be exploited anywhere. The company announced this research in a blog post.



Researcher Ofer Dekel with a micro-processor can run the Machine Learning algorithm someday

Microsoft's work is part of a big trend, bringing Machine Learning closer to devices and end users.

Earlier this month at the WWDC conference, Apple announced the new API Machine Learning (Vision & Natural Language) to allow developers to add Machine Learning-based intelligence to the application with just a few lines of code. They also revealed Core ML for developers with deeper knowledge of AI to take advantage of

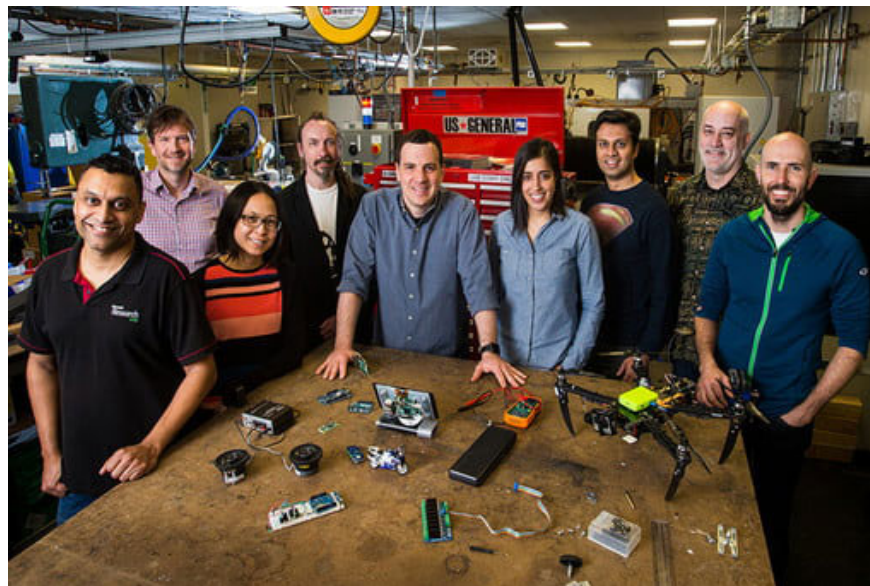
the ability to intervene in hardware. Apple's model helps developers teach Machine Learning algorithms on the Apple library provided. The system then switches the code to run the AI ??on the device.

Obviously in Apple's case, the hardware in the iPhone is worth \$ 700 and the CPU is much more powerful than anything that can be found on Raspberry Pi. But this trend is also very clear. These companies are bringing AI closer to users' devices, where it may rely less on accessing huge data in the cloud.

'If you're driving on the road and can't connect to the network, you won't want the AI ??to stop working. In fact, that's when you need it most, 'Varma said.

With this approach, we can understand the simpler and sensor-based tasks that can be learned by location, intention, recent actions or device data. In the near future, it may be the solution to a cancer treatment, for example (one of Watson AI's areas of interest at IBM).

With Microsoft, this Raspberry Pi breakthrough is simply the first stage in the neural network compression workflow so they can run on a hierarchical micro controller. To achieve that, according to Microsoft, the Machine Learning model needs to be 10,000 times smaller. That is the problem they are still dealing with.



Microsoft researchers are considering bringing AI to Raspberry Pi

At the same time, Microsoft also released the Preview version of the Machine Learning algorithm to the size of the Raspberry Pi on GitHub, where developers can try it out, tap on Raspberry Pi 3 and Raspberry Pi Zero.

Finally, this is part of Microsoft's Intelligent Edge strategy that CEO Satya Nadella outlined at the beginning of the year at the Microsoft Build conference. Microsoft hopes to see micro-processors that use AI to be used in offices to the clothes we wear.

With Varma, who also has decreased vision, this study is somewhat more personal. His team is developing a prototype of a smart walking stick to illustrate their research.

You finished reading the article "**Microsoft plans to bring AI into Raspberry Pi**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.

