

Tiny Tensor Brings Machine Deep Learning to Micros

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We've talked about TensorFlow before; Google's deep learning library. Crunching all that data is the province of big computers, not embedded systems, right? Not so fast. [Neil-Tan] and others have been working on <https://github.com/neil-tan/uTensor>, an implementation that runs on boards that support Mbed-OS 5.6 or higher.

Mbed of course is the embedded framework for ARM, and uTensor requires at least 256K of RAM on the chip and an SD card less than (that's right; less than) 32 GB. If your board of choice doesn't already have an SD card slot, you'll need to add one.

The project is under heavy development right now. You'll need to use the command line tools for Mbed and expect to spend a little time fiddling with things. The examples use a Nucleo F767ZI which requires an SD card breakout, but for about \$20 it might be worth starting with the same board the developer appears to be using.

Of course, you can install [TensorFlow on a Raspberry Pi](https://hackaday.com/2017/04/11/introduction-to-tensorflow/), too, but that's not really a proper microcontroller. It is really just a function of what your end goal is. It is easy to imagine a robot using an ARM for everything including high-level tasks like [object recognition](https://hackaday.com/2016/10/09/tensorflow-robot-recognizes-objects/). That's assuming it has enough horsepower.

By the way, our [pocket-sized signal generator](https://hackaday.com/2015/09/15/how-to-build-a-pocket-sized-mbed-signal-generator/) project used a K64F board that has an SD card slot and enough memory. That board might be a good target for uTensor.

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