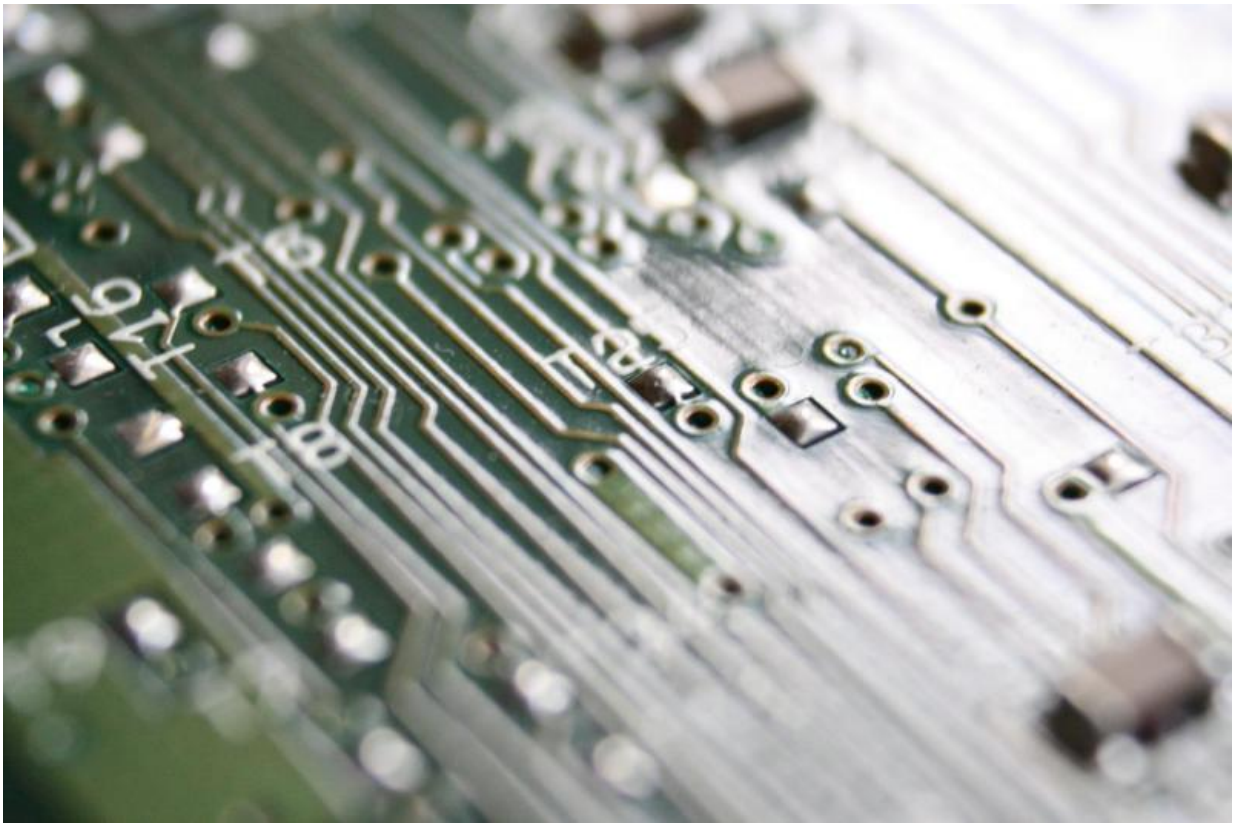


# Tensor2Tensor library to speed deep learning work

June 21 2017, by Nancy Owano

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(Tech Xplore)—Google Brain Team's senior research scientist Lukasz Kaiser had an announcement on Monday, [posted](#) on the Google Research Blog, that translates into good news for those engaged in Deep Learning

research.

"Today, we are happy to release [Tensor2Tensor](#) (T2T), an open-source system for training [deep learning](#) models in TensorFlow."

The launch of the open source system is expected to make training deep learning models faster and easier..

The message on GitHub: T2T "is a modular and extensible library and binaries for supervised [learning](#) with TensorFlow and with support for sequence tasks. It is actively used and maintained by researchers and engineers within the Google Brain team."

Just how can theTensor2Tensor release help accelerate deep-learning research? Speaking of its strengths, *SD Times* said "T2T includes a library of data sets and models to help [kick](#) start research."

Liam Tung, *ZDNet*, said, "The framework promises to take some of the work out of customizing an environment to enable deep-learning models to work on various [tasks](#)."

*TechCrunch* commented that "The sheer number of variables in AI research combined with the fast pace of new developments makes it difficult for experiments run in two distinct settings to [match](#)."

With a [modular architecture](#) easy to work with, the impact could be its T2T lowering the barrier for organizations looking to experiment with deep learning, said *TechRepublic*.

What does modular mean in this context?

Conner Forrest, senior editor, *TechRepublic*: "It also utilizes a standard [interface](#) among all aspects of a deep learning system, including datasets,

models, optimizers, and different sets of hyperparameters, the post said. So, users can swap versions of these components out to see how they perform together. It is this modular architecture that is one of the core values of T2T."

Kaiser also discussed how this lightens the burdens. He said many open-sourced Deep Learning systems "use unique setups that require significant engineering effort and may only work for a specific problem or architecture, making it hard to run new experiments and compare the results."

In contrast, "T2T facilitates the creation of state-of-the art models for a wide variety of ML [applications](#), such as translation, parsing, image captioning and more, enabling the exploration of various ideas much faster than previously possible."

Tung talked about this in *ZDNet*. He said that deep learning has had success in speech recognition, image classification and translation, but each model needs to be tuned specifically for the task at hand. Tung added that "models are often [trained](#) on tasks from the same "domain", such as translation tasks being trained with other translation tasks."

All this slows down research work and, as significant, "don't follow how the human brain works, which is capable of taking lessons from one challenge and applying it to solving a new [task](#)."

("Time," said Jon Fingas in *Engadget*, "is one of the biggest obstacles to the adoption of deep learning.")

*Engadget*'s headline on Tuesday: "Google can turn an ordinary PC into a deep learning [machine](#)."

Kaiser, writing in the blog, said, "This release also includes a library of

datasets and models, including the best models from a few recent papers (*Attention Is All You Need*, *Depthwise Separable Convolutions for Neural Machine Translation* and *One Model to Learn Them All*) to help kick-start your own DL research."

"We're eager to collaborate with you on extending T2T, so please feel free to open an issue on GitHub or send along a pull request to add your data-set or [model](#). See our contribution doc for details and our open issues."

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