Indian Institute of Science dives deep into neuromorphic computing and AI

By Soumik Ghosh | Sep 8th 2016

With the Centre of Neuroscience developing neuromorphic computing, and the Centre of Computational & Data Sciences working on AI, IISc is paving the way for advanced tech in India.

India has been rather slow in warming up to deep learning, but there's a reason behind this. Deep learning requires a robust computational model. So, organizations and labs which already had this computational prowess and funding in place were much faster in identifying and adopting these technologies.

Sriram Ganapathy, assistant professor at IISc, had worked as an IBM Watson researcher at Yorktown Heights, and shared his insights about deep learning.

"The government's interested in identifying who's speaking on a call, what language is being spoken, and if a particular keyword was used. Sifting through petabytes of data is humanly impossible, and that's where deep learning steps in."

Sriram Ganapathy
Asst. Professor,
IISc & ex-IBM Watson Researcher

"Deep learning builds a hierarchy of classifiers by taking the data and building a layer of representation, then taking another layer of representation and adding it to the first layer, and so on and so forth," he says.

"We've identified that these models are data-hungry. The more you feed them, the better they perform. Previous models didn't have them. And these machines like to be overfed," reveals Ganapathy.

One particular solution the IISc research team is working on sounds a lot like what Professor X uses to control thoughts. The technology makes use of a skull cap that could be used to record thoughts and convey them in situations where the user is a afflicted with a speech or a physical disability. The device does this by capturing and conveying EEG (Electroencephalogram signals). The technology also helps in predicting what a user wants to type, based on his/her imagined speech.

What business does it serve?

When you talk about industrial applications, the opportunities are limitless. Companies are already using the deep network to predict your interests. It's no rocket science. Consider Netflix: If you expressed an interest in thrillers, and watched a political movie the last time you logged in, guess what Netflix is going to pull up next? Political thrillers, of course.

Listening to every word being spoken is a privacy issue for sure. But if the system can be harnessed to determine red alerts, or if two speakers are one and the same, the job is done. Banks, too are now investing in this technology. There are instances when a customer might not want to key in a password, but say it. "That's when neuromorphic computing does the job – to identify a speech pattern and match it to the authorized one," he adds.