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Macro Roundup Article

Headline: An Analog-AI Chip for Energy-Efficient Speech Recognition and Transcription

Article Link: https://www.nature.com/articles/s41586-023-06337-5

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Tweet: IBM researchers demonstrate a new technology that is 14 times as energy efficient as conventional chips at speech recognition, with potential for other AI applications.

Summary: Models of artificial intelligence (AI) that have billions of parameters can achieve high accuracy across a range of tasks but they exacerbate the poor energy efficiency of conventional general-purpose processors, such as graphics processing units or central processing units. Analog in-memory computing (analog-AI) can provide better energy efficiency by performing matrix–vector multiplications in parallel on 'memory tiles'. However, analog-AI has yet to demonstrate software-equivalent (SWeq) accuracy on models that require many such tiles and efficient communication of neural-network activations between the tiles. We demonstrate fully end-to-end SWeq accuracy for a small keyword-spotting network and near-SWeq accuracy on the much larger MLPerf8 recurrent neural-network transducer (RNNT.)

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