https://doi.org/10.1038/s41928-023-00924-0

Anniversary issues

Five years of *Nature Electronics*.

Nature Electronics launched five years ago this month with an aim to connect the work of scientists, engineers and industry. We have since published papers from physicists, nanotechnologists, chemists and materials scientists; from electronic, electrical, mechanical and biomedical engineers; and from researchers in various sectors of industry. We have featured reviews and analysis that has explored the past, present and future of electronic technology, and news and comment that has examined the wider social, ethical and legal issues that surround the implementation of new technology. We have also launched our Reverse Engineering series, which is dedicated to the history of influential technologies, and our annual technology of the year, which is dedicated to emerging areas that have achieved a key breakthrough or reached an important moment of development. (And for anyone who has been paying close attention over the last five years, and was expecting to see our 2023 technology of the year in this issue, it will appear next month.)

The field of electronics continues to expand and evolve, so we won't reminisce for long. But to mark the first five years of *Nature Electronics*, this year we will be publishing a series of short articles that explore key topics in the field through the research that has been featured in the pages of the journal. We begin, in this issue, with work on memristors.

The memristor is a resistive device with an inherent memory and was first postulated by Leon Chua back in 1971 (ref. [1]). (You can read more about this discovery in the Reverse Engineering article from Chua that appeared in our May 2018 issue[2].) A team of researchers at Hewlett Packard Labs led by Stanley Williams then connected the concept to physical devices in 2008 (ref. [3]).

Memristors are of potential use in a variety of applications[4] — including in-memory and neuromorphic computing — and the field has progressed quickly since the 2008 report. The power of current memristor-based hardware systems can, for a start, be seen in the research articles published in this issue of *Nature Electronics*. First, Suhas Kumar and colleagues report activity-difference-based training of neural networks using analogue memristor crossbars. These deep neural networks are trained to accurately classify Braille words, and modelling shows that the approach can offer orders of magnitude improvements in energy efficiency and latency compared with those based on conventional processors (graphics processing units and central processing units). Elsewhere in the issue, Damien Querlioz and colleagues report a memristor-based Bayesian machine. The technique allows Bayesian inference to be performed with an energy efficiency that is orders of magnitude higher than is possible with a standard system based on microcontroller units.

As for the short anniversary article on memristors in this issue, it, like the others that will appear in the series, provides only a snapshot of what has happened in the last five years (in this case, by discussing one article from each year of the journal that was featured on the cover). And it misses many of the other exciting papers published on the topic in the journal, not to mention published elsewhere. But we hope that the article, and the series, will provide a glimpse of the progress that has been achieved in electronics research in the last five years — and a glimpse of what is to come in the next five.

Published online: 31 January 2023

References

1. Chua, L. *IEEE Trans. Circuit Theory* **18**, 507–519 (1971).
2. Chua, L. O. *Nat. Electron.* **1**, 322 (2018).
3. Strukov, D. B., Snider, G. S., Stewart, D. R. & Williams, R. S. *Nature* **453**, 80–83 (2008).
4. Zidan, M. A., Strachan, J. P. & Lu, W. D. *Nat. Electron.* **1**, 22–29 (2018).