

new (1)

Home News Article

03 January 2017

## Scientists turn memory chips into processors

Memory chips could now perform tasks which were traditionally done by computer processors, according to Nanyang Technological University (NTU), Singapore in collaboration with the RWTH Aachen University and Forschungszentrum Juelich research centre.

According to the researchers, this means data could now be processed where it is stored, leading to faster and thinner mobile devices and computers.

“It is like having a long conversation with someone through a tiny translator, which is a time-consuming and effort-intensive process,” NTU Assistant Professor Anupam Chattopadhyay explained. “We can now increase the capacity of the translator, so it can process data more efficiently.”

The computing circuit was built using memory chips known as Redox-based resistive switching random access memory (ReRAM). Instead of storing information, the team showed how ReRAM can be used to process data. Current devices and computers have to transfer data from the memory storage to the processor unit for computation.

The researchers believe the circuit could double the speed of current processors found in laptops and mobile devices.

The prototype ReRAM circuit processes data in four states instead of two: 0, 1, 2, or 3. Because ReRAM uses different electrical resistance to store information, it could be possible to store the data in an even higher number of states, hence speeding computing tasks beyond current limitations.

Professor Rainer Waser from RWTH Aachen University said: “ReRAM is a versatile non-volatile memory concept. These devices are energy-efficient, fast, and they can be scaled to small dimensions. Using them not only for data storage but also for computation could open a new route towards an effective use of energy in the information technology.”

### Author

Peggy Lee ([/site/contact-form.aspx?](/site/contact-form.aspx?to=SmhLFpX8XAIW86D%2b1gMGrGkoKjn0yOuqkJskUZLQsmXF9IHXUNDFavdMTPdYcVv%2bZhN9F%2foXqToN7SUa4%2fHC4IanzaFi56lvs7o7g%2fJ4ri0%3d)

[to=SmhLFpX8XAIW86D%2b1gMGrGkoKjn0yOuqkJskUZLQsmXF9IHXUNDFavdMTPdYcVv%2bZhN9F%2foXqToN7SUa4%2fHC4IanzaFi56lvs7o7g%2fJ4ri0%3d](/site/contact-form.aspx?to=SmhLFpX8XAIW86D%2b1gMGrGkoKjn0yOuqkJskUZLQsmXF9IHXUNDFavdMTPdYcVv%2bZhN9F%2foXqToN7SUa4%2fHC4IanzaFi56lvs7o7g%2fJ4ri0%3d))



([/article-images/149726/singapore2\\_popup.jpg](/article-images/149726/singapore2_popup.jpg))

Comment on this article

### Websites

<http://www.dwih.in/fzj> (<http://www.dwih.in/fzj>)

<http://www.ntu.edu.sg/Pages/home.aspx> (<http://www.ntu.edu.sg/Pages/home.aspx>)

<http://www.rwth-aachen.de/> (<http://www.rwth-aachen.de/>)

### Companies

[Nanyang Technological University \(/electronics-suppliers/nanyang-technological-university/80288740/\)](/electronics-suppliers/nanyang-technological-university/80288740/)

[RWTH Aachen \(/electronics-suppliers/rwth-aachen/80334059/\)](/electronics-suppliers/rwth-aachen/80334059/)

This material is protected by MA Business copyright See Terms and Conditions. (<http://assets.markallengroup.com/company/ma-business/legal/terms-conditions.pdf>) One-off usage is permitted but bulk copying is not. For multiple copies contact the sales team (</site/contact-form.aspx?to=iuMCxkTzo495bpnu87eNagmbacL%2f6WDOtrtaU6enAkA02frG2L7uW4NsPVPBlgVv3dNBvkKFbAWlJTGNO1piOavKUJCvBSNHJ4DtG2qAcX6gtcAVB2qf4%2bFOtFPECR>).

What you think about this article:

### Add your comments

Name

Email