

#BREAKING 10 Palestinians killed, dozens injured as Israeli strike hits home near Al-Nafaq Street, Sheikh Radwan neighborhood of northern Gaza, civil defense tells Anadolu

#BR
Shei

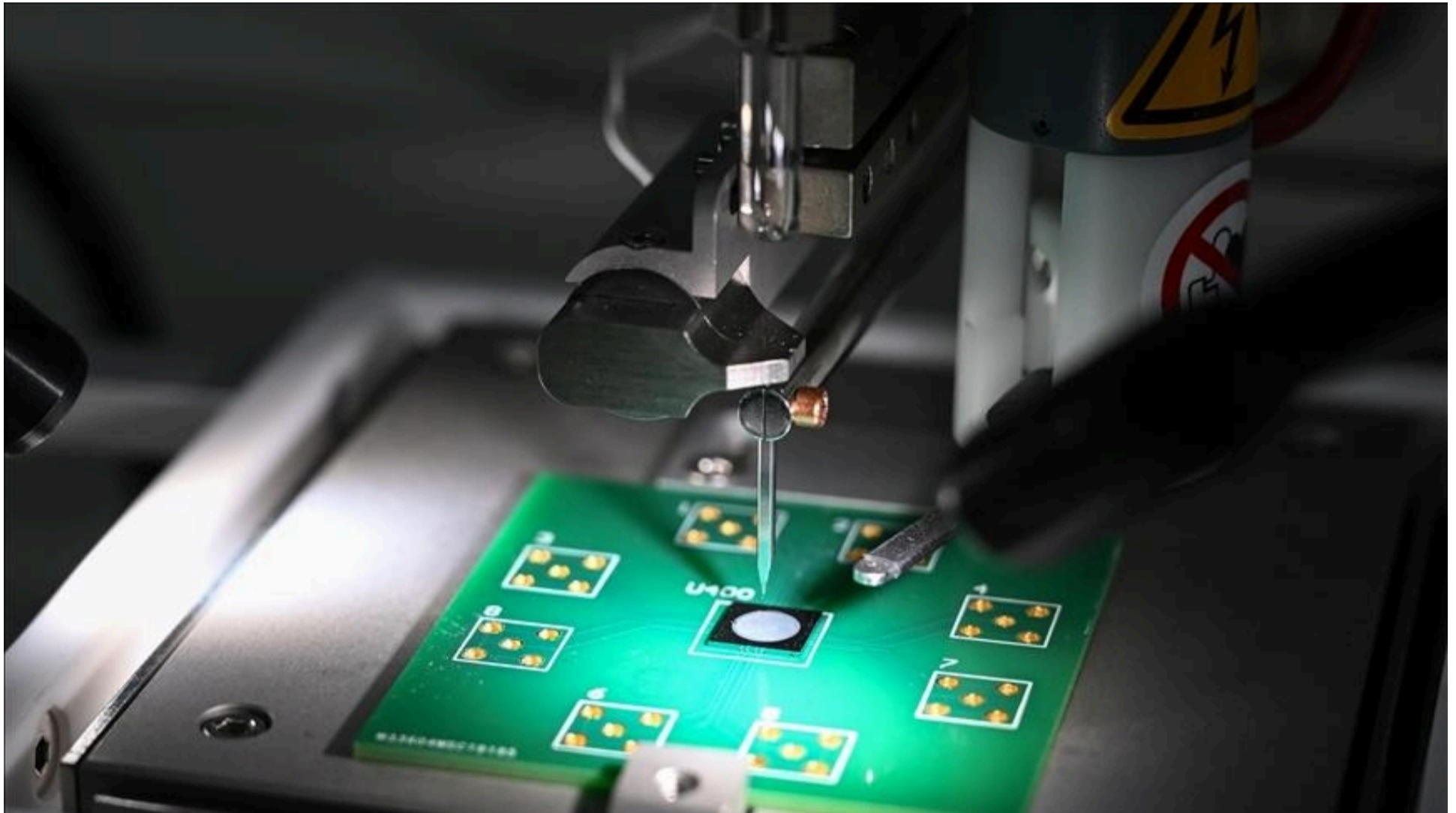


TÜRKİYE, SCIENCE-TECHNOLOGY

Turkish university develops device to boost phone battery life

Neuristor device promises enhanced energy efficiency for phones and AI

Bugrahan Ayhan | 04.12.2024 - Update : 04.12.2024



ANKARA



The Middle East Technical University (METU) in Ankara has developed a neuristor device with a micro-electromechanical system (MEMS) that could extend phone battery life to an entire year.



Baris Bayram, a professor of electrical engineering at METU, told Anadolu that the MEMS neuristor device is based on how the human brain integrates and processes memory.



Developed at the ULTRAMEMS Research Laboratory, the MEMS neuristor device has been in the works for four years with support from the Turkish Ministry of Industry and Technology, the Council of Higher Education (YÖK), and Türkiye's Scientific and Technological Research Council (Tubitak).

Bayram explained that the project was inspired by studies examining the similarities between brain cells and energy efficiency systems.

He mentioned that the MEMS neuristor device is now fully compatible with existing production processes and can be adopted by companies globally for manufacturing.

"The human brain consumes around 25 watts of energy," said Bayram, "if we were to perform operations akin to the human brain with the most up-to-date processor, this would equal 25 megawatts, meaning more energy consumed."

Bayram noted that the integration of memory and processor units in the brain is a key factor for energy efficiency, and computers use memory modules and processors similarly to the brain.

“In a computer, information constantly moves from the memory module to the processor to be processed there and then it is received back to the memory, and this constant transfer increases energy consumption and causes delays. However, in the neuromorphic processor we developed here, the memory module and processor are enclosed in the same structure, therefore its processes require less energy,” he said.

“For example, we currently need to charge our phones every day, but if the transistors inside the phone were replaced with MEMS neuristors, then we would not need to charge our smartphones at all for an entire year,” he added.

Bayram pointed out that people use their phones daily, and many tasks are performed on remote servers due to insufficient processing power in phones, leading to potential data protection risks.

He highlighted that MEMS neuristor devices would not only reduce phone energy consumption but also enable devices to handle high-processing tasks locally, enhancing personal data protection by reducing dependence on external servers.

Bayram also discussed the high energy consumption of artificial intelligence (AI) systems, which rely on transistor-based systems. Cooling these systems is a challenge for large data centers, such as Google’s.

“For this reason, they are generally installed in seas to cool them, but if these systems were built with neuromorphic processors, which would use our MEMS neuristor, we could install these data centers even in deserts because there would be no heating problems and by reducing energy consumption and increasing performance, it might as well contribute to the fight against climate change, maybe we will cut down fewer trees and it will turn into a more environmentally friendly technology,” he said.

Bayram emphasized that the MEMS neuristor device developed in Türkiye will revolutionize technology both locally and globally. He noted that companies such as Analog Devices, HP, IBM, Nvidia, Amazon, and Google are among those they plan to meet with to introduce the world’s first MEMS neuristor.

Berre Vize, a research assistant in electrical engineering at METU, told Anadolu that existing neuristor devices are not yet suitable for industrial use, but the MEMS neuristor they created meets the necessary requirements and has the potential to transform healthcare, finance, and transportation by enabling faster and more efficient AI computing systems.

“Although we are still at the beginning of the global neuromorphic processor revolution, we will work hard to contribute to Türkiye’s pioneering and leading position in the field with our indigenous invention,” said Vize.

*Writing by Emir Yildirim

Anadolu Agency website contains only a portion of the news stories offered to subscribers in the AA News Broadcasting System (HAS), and in summarized form. [Please contact us for subscription options.](#)

Related topics

micro-electromechanical system

neuristo

World

Russia stresses implementation of Israel-Lebanon cease-fire agreement

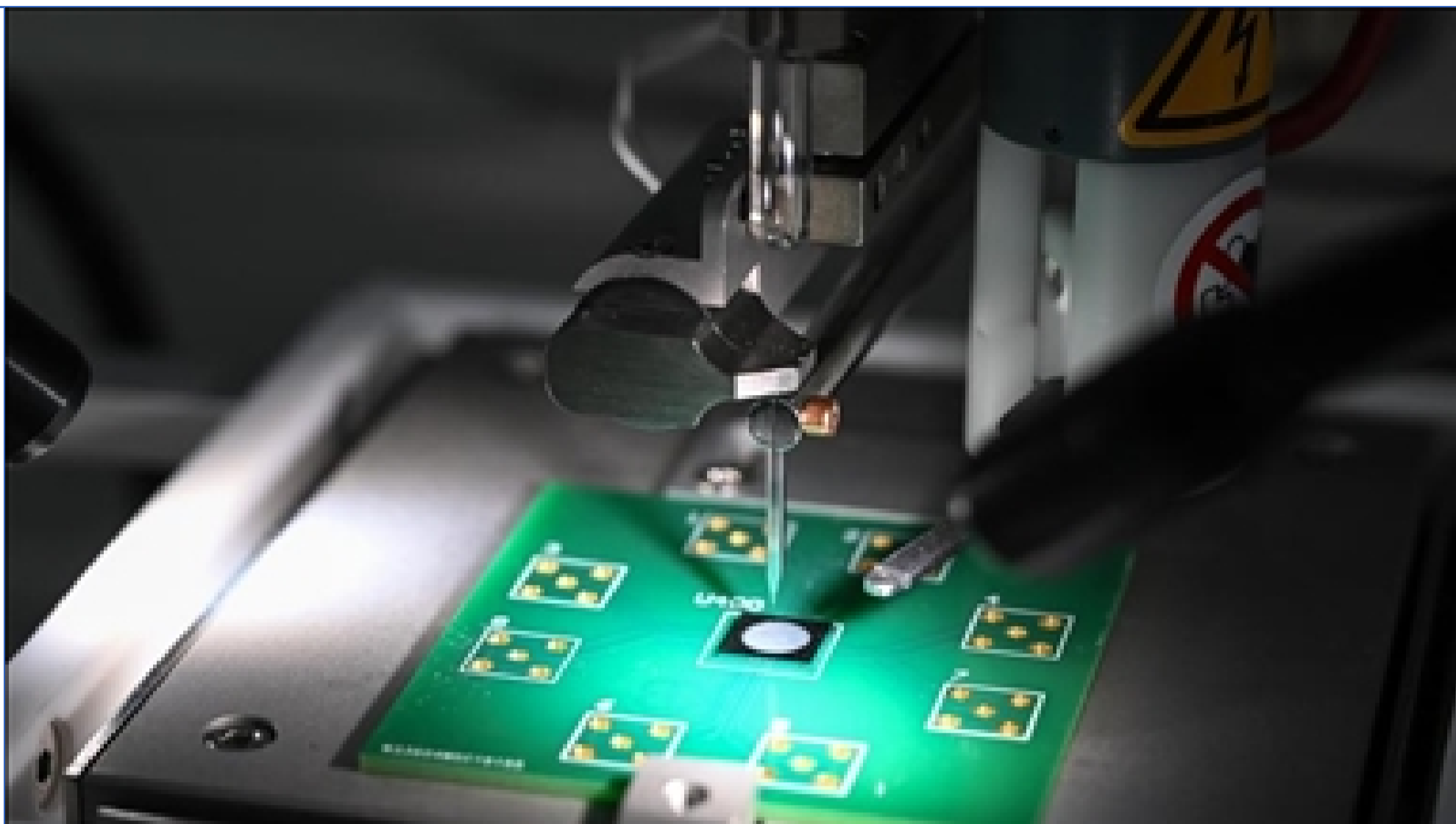
Russia says it expects events in South Korea to not affect situation in broader peninsula

Russian ship fires warning shots at German helicopter in Baltic Sea

NATO member states will do their best to provide Ukraine with more air defense: Alliance chief

Morning Briefing: Dec. 4, 2024

Related news



Turkish university develops device to boost phone battery life



Corporate

- History
- Editorial Guidelines
- Social Media Policies
- Executive Team
- Domestic Offices
- International Offices
- Media Center
- Communication

RSS

- Subscription Requests
- Announcement Service
- Quality Management
- Privacy and Cookies Policy
- Information Policy
- Diary

Network

- Business News
- Finance Terminal
- Anadolu Images
- Energy Terminal
- AA Academy