Living Human Neurons Play Doom on a Chip

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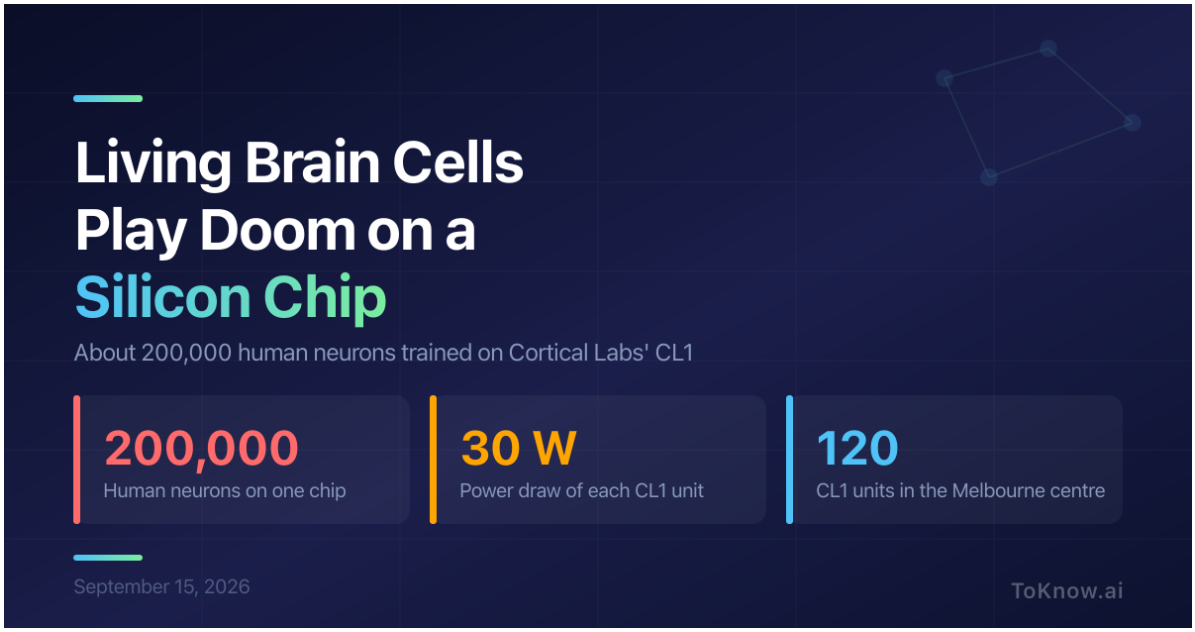

Cortical Labs, a Melbourne startup, taught roughly 200,000 living human neurons to play DOOM (specifically Freedoom, a free clone built on the same engine). There is no screen, no eyes. Software turns the game state into electrical stimulation on the electrode array the cells sit on, so a demon on the left stimulates the left "sensory" zone, and their spikes are read back as commands to shoot, strafe, or turn. Independent researcher Sean Cole built the first working version during a Stanford hackathon using Cortical Labs' Python API, in "a matter

of days". The neurons adapt by rewiring themselves, a loop chief science officer Brett Kagan calls "adaptive real-time goal-directed learning".

The demo matters less as a gaming milestone than as proof the interface works. The cells play "like a beginner who's never seen a computer", Kagan says, and the DOOM clip is a company video, not a published result. The tooling is real: the company's CL API paper describes microsecond-timed stimulation and real-time readout any developer can drive. Cortical Labs now runs a Melbourne "Bio Data Centre" of 120 CL1 units, each holding 200,000 neurons and drawing 30 watts, that powers its Cortical Cloud service. A conventional GPU draws thousands.

Keeping the tissue alive is the bottleneck. Feeding and cleaning living neurons is "laborious and time-consuming", the company says, and it swaps tubing every five to six months even as it claims cells alive "for 500 days". Biology's maintenance bill, not its energy draw, is the number to watch.

Read More: AMD Bought a Chip Startup That Hard-Wires AI Models Into Silicon, another attempt to change the computer instead of the model.

Sources:

- Living Human Brain Cells Play DOOM on a CL1 (Cortical Labs)
- The CL1 biological computer (Cortical Labs)
- 200,000 living human neurons on a microchip demonstrated playing Doom (Tom's Hardware)
- This Melbourne data centre runs on human brain cells (Information Age, ACS)
- They Are Learning: Cortical Labs Makes 200,000 Living Human Brain Cells Play Doom (IFLScience)

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