A new game allows ordinary people to conduct scientific research while competing with others.

We have seen a number of unusual innovation in neuroscience, such as a device that helps owners understand what their dogs are thinking and a system that allows people to 3D print their thoughts. Ultimately, more useful innovations in neuroscience will depend on a better understanding of the connections between the 80-90 billion neurons in the human brain. Although existing technology enables the creation of images of individual neurons, it requires human input in order to trace and classify the different shapes of each nerve cell. This is because human eyes are much better than computers at distinguishing the delicate and highly branched structures of the neurons, and at inferring detailed structures from faint and often incomplete data.

Tracing and classifying the neuronal structure is slow work and requires specialised training, but a game designed by computer scientists at the University of Washington Center for Game Science and the Allen Institute for Brain Science allows ordinary citizen-scientists to compete to produce complete, three-dimensional reconstructions of neurons from imaging data. The game, called Mozak, shows players a magnified volumetric image of a neuron, and asks the player to trace or draw its visible branches. New players get real-time feedback from expert neuroscientists, which allows them to quickly acquire world-class expertise. Mozak also requires general consensus among multiple players about a neuron's shape, which allows the game to provide neuroscientists with validated, gold-standard reconstructions.
Mozak players — around 200 a day — have been able to reconstruct neurons 3.6 times faster than previous methods. The players also outperform computers at the complicated task of tracing the shapes of neurons, producing reconstructions that are between 70 to 90 percent complete, compared to just 10 to 20 percent for the best computer-generated reconstructions. Such accurate and fast mapping will help researchers to better understand how neuronal structure relates to brain function. In what other fields might a crowdsourced game enable citizen-scientists to speed up research?

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