

# Researchers use AI to find patterns among multitude of people and cells

October 9 2019, by Bill Hathaway

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A group of Yale scientists have devised a way to leverage artificial neural networks to reveal larger patterns of activity of individual cells that come from a multitude of individuals.

In a paper published Oct. 7 in the journal *Nature Methods*, researchers

from the lab of Smita Krishnaswamy, assistant professor of genetics and computer science, describe how the AI [neural network](#) they created, called SAUCIE (Sparse Autoencoder for Clustering, Imputation, and Embedding), can reveal crucial cellular differences within individuals as well as broader patterns that tell the story of how the body functions.

For instance, in a collaboration with Ruth Montgomery, director of the university's CyTOF Facility, Yale researchers used SAUCIE to analyze 20 million cells from 60 patients and identify rare Gamma-Delta T cell types that regulate how the body responds to the virus that causes Dengue fever.

"With SAUCIE, we were able to find the proverbial needle in the haystack, and 20 million cells is a very big haystack," said first author Matt Amodio, a [graduate student](#) in computer science. The method, which can accommodate a larger volume of patient data than other techniques, will also allow researchers to identify larger clusters of cellular activity that could shed light on the basis of a host's pathologies.

**More information:** Matthew Amodio et al. Exploring single-cell data with deep multitasking neural networks, *Nature Methods* (2019). [DOI: 10.1038/s41592-019-0576-7](https://doi.org/10.1038/s41592-019-0576-7)

Provided by Yale University

Citation: Researchers use AI to find patterns among multitude of people and cells (2019, October 9) retrieved 26 April 2024 from <https://phys.org/news/2019-10-ai-patterns-multitude-people-cells.html>

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