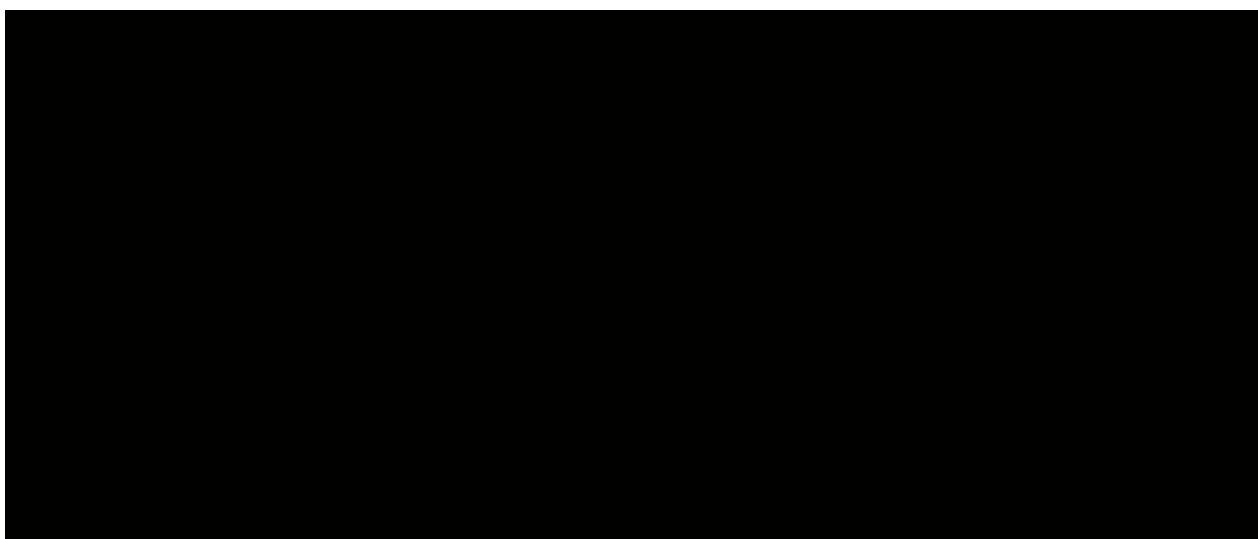# Machine Learning's 'Amazing' Ability to Predict Chaos

In new computer experiments, artificial-intelligence algorithms can tell the future of chaotic systems.

By Natalie Wolchover

Researchers have used machine learning to predict the chaotic evolution of a model flame front.

Half a century ago, the pioneers of [chaos theory](#) discovered that the "butterfly effect" makes long-term prediction impossible. Even the smallest perturbation to a complex system (like the weather, the economy or just about anything else) can touch off a concatenation of events that leads to a dramatically divergent future. Unable to pin down the state of these systems precisely enough to predict how they'll play out, we live under a veil of uncertainty.

But now the robots are here to help.

In a series of results reported in the journals *Physical Review Letters* and *Chaos*, scientists have used [machine learning](#) — the same computational technique behind recent successes in artificial