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By Duncan Geere June 05, 2015 World of tech

120-year old problem solved by reverse engineering

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A 120-year old mystery involving the regeneration of flatworm cells has been solved by a computer that was programmed to develop scientific theories - without help from humans.

The machine, which was built by biologists at Tufts University, was able to explain the mechanism of how the genes of sliced-up flatworms are able to turn the sliced-up cells into new organisms - a process called planaria.

To do so, it scanned the data gathered by studies performed in the field and then simulated a number of networks formed by the worm's genes until it found a match for an existing study. Every time it was successful in doing so, it saved that result and manipulated the rest of the network until it matched a new study and so on. After just three days, it had the answer.

Virtual assistant

"This represents the most comprehensive model of planarian regeneration found to date," said Michael Levin, the senior author on the paper detailing the discovery. "While the artificial intelligence in this project did have to do a whole lot of computations, the outcome is a theory of what the worm is doing."

He added that it was remarkable that the end-result was a reasonably simple model that humans could easily comprehend, not a tangled mess. "All this suggests to me that artificial intelligence can help with every aspect of science, not only data mining but also inference of meaning of the data," he said.

The solution to the mystery, as well as the details of the software that solved it, were published in PLOS Computational Biology.

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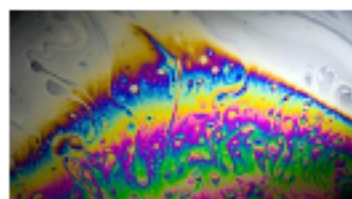
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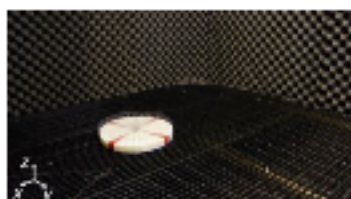
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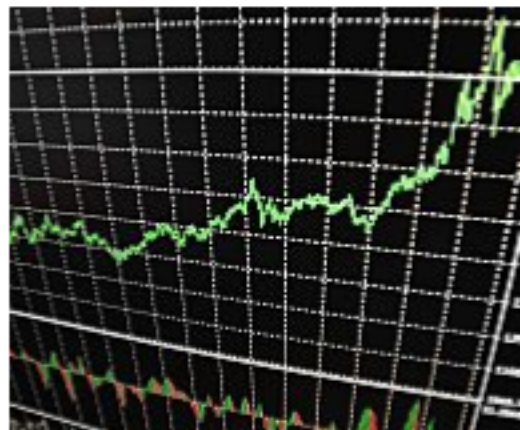
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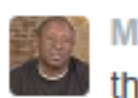
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