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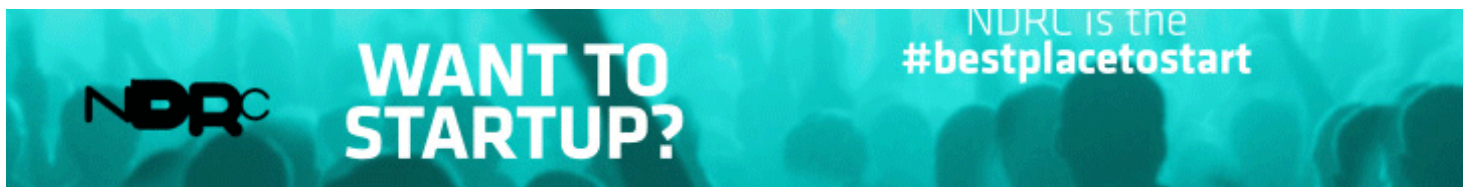
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Earth Day: Using game theory and AI to beat the poachers

by [Gordon Hunt](#)

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Researchers are now using AI, game theory and big data to protect wildlife and forests around the world, as technology finally catches up with poachers.

The fight against poaching has proven very difficult in the past century, that's despite the advances in technology that have littered conservationism in that time.

However, that could all be about to change thanks to a bit of clever thinking, with game theory and big data combining to arm park rangers with the necessary tools to fight back.

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The problem for park rangers is often scale, far too much land is monitored, on foot, by far too few. This means poachers have a relatively free reign, knowing the odds of the park ranger being at the right place, at the right time, is slim.

Now “green security games” are being created, which use mathematical and computer models of conflict and cooperation between rational decision-makers. By this, predictions of the behaviour of adversaries can be generated, giving rangers better clues as to where to patrol.

Two examples have been presented showing the benefits of this data management, with PAWS (Protection Assistant for Wildlife Security) and SORT (Simultaneous Optimization of Resource Teams) aimed at protecting wildlife and forestry respectively.



PAWS suggests patrol routes in Malaysia based on behavioural models, via Team leader from Rimba

PAWS is basic in its premise. Logged patrol data – location, dates, evidence of poaching etc – grows and grows, producing more “learned” predictions to better plan patrols.

Tested out in 2013 in Uganda, the system has already led to more observations of poacher activities per kilometre. That's because the topographical difficulties (climbs, drops etc) that often slow down patrols can be better managed, offering faster routes and more effective choices of location.

The system can also take into account the natural transit paths that have the most animal traffic – and thus the most poaching – creating a “street map” for patrols.



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SORT was created in a similar way. Targeting logging, it collates maps of national parks, models the costs of security resources based on salaries and budgets for particular areas, and recommends the best use of funds.

“This work is not only important because of the direct beneficial impact that it has on the environment, protecting wildlife and forests, but on the way that it can inspire other to dedicate their efforts into making the world a better place,” said USC’s Sara McCarthy, one of the researchers involved.

The project was part-funded by the US National Science Foundation.

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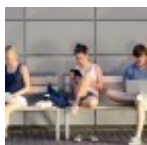
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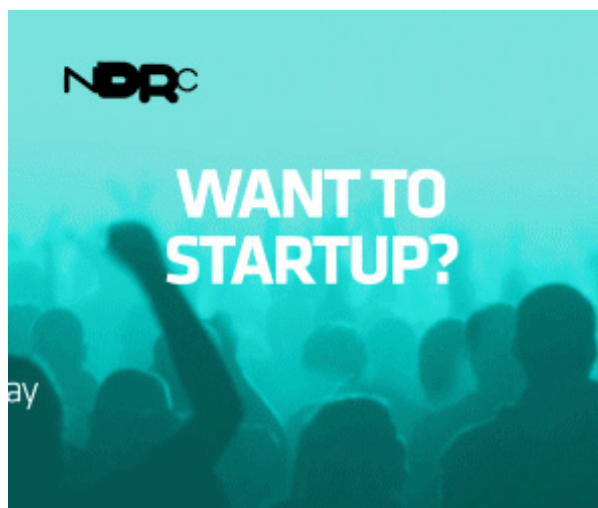
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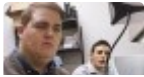
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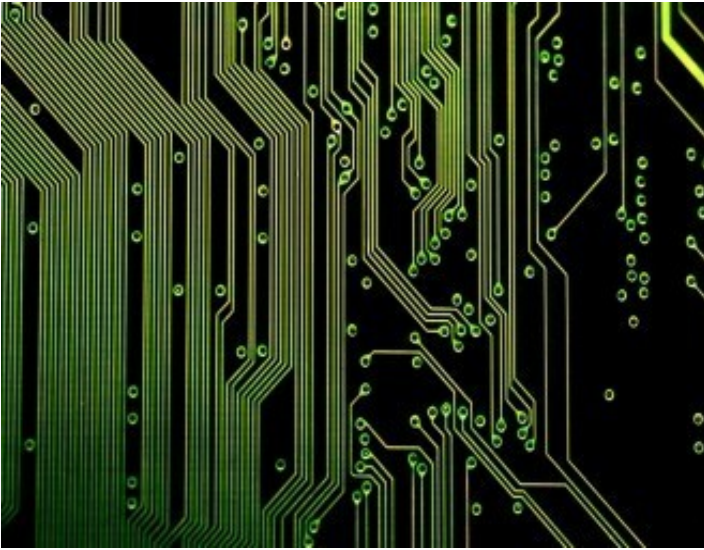


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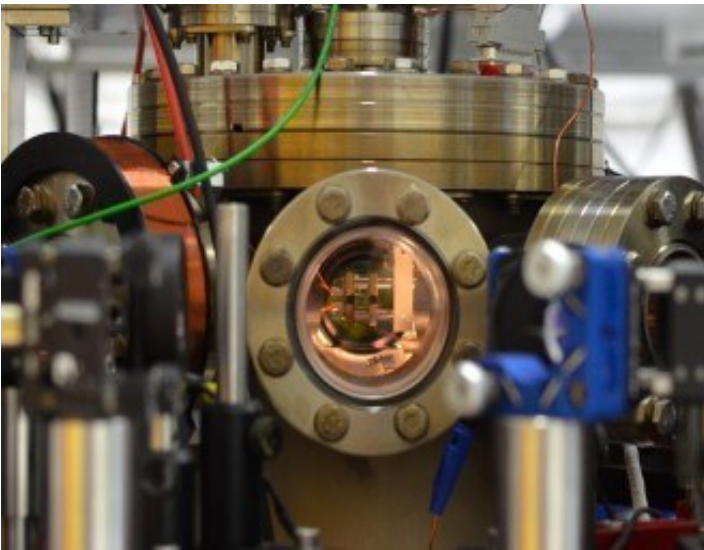
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