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Artificial Intelligence to Help Curb Poaching: Study

Indo-Asian News Service , 22 April 2016

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Image: Rob Pickles, Panthera

As the world celebrated Earth Day on Friday, a team led by an Indian-origin researcher has found a way to use artificial intelligence (AI) to protect the Earth's endangered animals and forests by outwitting poachers with technology.

With support from the US National Science Foundation (NSF) and the US Army Research Office, researchers are using AI and game theory to solve poaching, illegal logging and other problems worldwide, in collaboration with researchers and conservationists in the US, Singapore, the Netherlands and Malaysia.

"This research is a step in demonstrating that AI can have a really significant positive impact on society and allow us to assist humanity in solving some of the major challenges we face," said Milind Tambe, professor of computer science and industrial and systems engineering at the University of Southern California (USC).

"In most parks, ranger patrols are poorly planned, reactive rather than pro-active and habitual," said Fei Fang, PhD candidate from the University of Southern California (USC).

Fang is part of an NSF-funded team at USC led by Tambe who is also director of the Teamcore Research Group on Agents and Multiagent Systems.

The team's research idea - a game theory - uses mathematical and computer models of conflict and

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The team's research idea - a game theory - uses mathematical and computer models of conflict and cooperation between rational decision-makers to predict the behaviour of adversaries and plan optimal approaches for containment.

"This research is a step in demonstrating that AI can have a really significant positive impact on society and allow us to assist humanity in solving some of the major challenges we face," Tambe noted.

The researchers first created an AI-driven application called PAWS (Protection Assistant for Wildlife Security) in 2013 and tested the application in Uganda and Malaysia in 2014.

PAWS used data on past patrols and evidence of poaching. Now, as PAWS receives more data, the system "learns" and improves its patrol planning. Already, the system has led to more observations of poacher activities per kilometre.

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.

The application also randomises patrols to avoid falling into predictable patterns.

The team recently combined PAWS with a new tool called CAPTURE (Comprehensive Anti-Poaching Tool with Temporal and Observation Uncertainty Reasoning) that predicts attacking probability even more accurately.

The researchers presented the findings at the "AAAI Conference on Artificial Intelligence" in Arizona recently.

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