AI for forest conservation
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Often we read news about wild forest fires that burn down entire landscapes causing immense damage to the environment, animal life, human lives living in the vicinity and, of course, the climate at large. In the last decade, 36 per cent of India's forest cover has been under the radar of catastrophic forest fires. While the fire is just one part of how forests are shrinking, deforestation, man-animal conflict, poaching, and developing villages and townships in and around the forest area are some of the many other reasons for forests to be in trouble.

Traditionally forests were under the surveillance and supervision of the local and tribal people who took pride in taking care of the land. But, with the changing environment and developing economy, they have been unable to keep up and foresee circumstances. Even forest authorities and officials have been unable to keep mishaps at bay, and it is unreasonable to even expect a few people to collectively manage and monitor such a huge forest. It is humanly impossible.

As a result, poaching (just one example) has become a full-time job for criminals. They have become tech-savvy, and the efforts to curb wildlife crimes need pace and advanced technology. Man-animal conflict is another area causing immense trouble to both animals and humans. Controlling these unforeseen accidents also requires technological intervention. This is where Artificial Intelligence or AI is making a difference.

How is AI enabling this change?
Before we understand what AI can do for forests, let us understand the basics of AI. This is one technology which is designed to help human beings. AI-enabled robots/machines can self-perform tasks, self-learn and improvise on the go, allowing human beings to do better and more innovative work. In the forest conservation context, AI is helping humans by making identifications of animals, their movements, and unexpected events easy and prompting the authorities to take action. This reporting happens in near real-time and provides multi-spectral reconnaissance and surveillance of the forest.

AI-enabled aerial drones, infra-red cameras, real-time monitoring devices, RFID tags, and GPS geo-location for surveillance are some technologies used for wildlife conservation worldwide. In India and globally, AI-loaded robotics and drones are being tested in forests to understand various use cases for protecting wildlife and the forest.

Critical use cases of AI in forest conservation
Integration of technological innovations and AI can bring change in forest management and conservation practices.

In the case of a wild forest fire, AI-enabled systems and machines can detect the possibility of a fire. The system can be fed with data on sensitive and fire-prone areas and how to identify the possibility of an upcoming disaster. In case of an unrelated activity in those areas, the system can ring off an alarm by sending notifications to the authorities, who can immediately take preventive actions. This will save time, natural resources and tons of money. Forest tourism can also be monitored in similar ways.

Some other relevant use cases can be fighting modern-day threats, including unauthorized deforestation, human encroachment, trespassing, smuggling, wildlife poaching, mitigating man-animal conflict, tracking animal migration, and wildlife tourism. All these issues can be dealt with AI-powered drones. A drone flying over the area could detect a threat or a breach. So, if a drone alerts authorities about human movement in a certain part of the forest and the forest officials mark that as risky or not a cause for concern, the drone learns that and acts accordingly. If any human intrusion is found in restrictive parts of the forests and those are red-flagged, the system learns to identify who is allowed, where, when, what time of the day, and for what kind of activity and prompts the concerned departments.

Man animal conflict and illegal activities in forests need technological intervention. From identifying areas for animals that can be a threat to their lives to mapping out threat zones for illegal activities, automated technology can be used to mitigate the risk.

Leveraging AI for maximum mileage

AI plays a critical role in facilitating forest conservation. From addressing conflicts to alerting landscape changes to unmasking illegal activities, AI can be leveraged to get through different demanding challenges. It can be used to identify felonious people, activities, traps, identify drivers of conflict between animals and villagers and even use the predicted conflict as input for designing an optimal policy. The more this technology is deployed on the ground level, the better results can be expected with minimum human intervention.

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