Microsoft

AI for Earth Grantee Profile

Peace Parks Foundation

Smart Park

Summary

To combat increasing wildlife crime, the Peace Parks Foundation is developing Smart Park, an integrated set of systems and technologies on Microsoft Azure designed to significantly enhance anti-poaching methods and protection for rhinos and other endangered wildlife by providing data-driven and intelligent decision-making.

Fighting wildlife crime with intelligent poacher detection

Southern Africa is home to some of the largest continuous populations of the world-famous “big five” animals: the lion, cape buffalo, leopard, elephant, and rhinoceros. As it happens, most of these animals’ wildlife havens are located along international borders. In fact, about 75 percent of the rhinos in the world are found along the borders of South Africa, Botswana, Swaziland, and Zimbabwe.

> Already critically endangered, more than 1,000 rhinos are killed every year for their horns.

Protecting and rebuilding dwindling wildlife numbers in these areas requires cross-boundary cooperation. And in recent years, a movement to establish transboundary protected areas has taken off, thanks largely to the efforts of the Peace Parks Foundation (PPF).

Based in Stellenbosch, South Africa, PPF was founded with the goal of facilitating cross-border conservation efforts and has been actively involved in establishing and developing 10 of the 18 transboundary conservation areas in southern Africa, called peace parks. PPF also provides strategic planning support to governments and other agencies in support of the parks, which cover roughly one million square kilometers.

In recent years, wildlife crime has become a major issue in southern Africa. Already critically endangered, more than 1,000 rhinos are killed every year for their horns. But combating poaching is challenging for many reasons. Poachers often enter the park with high-caliber rifles, take many animals at one time, and then quickly escape undetected with the help of new technologies. For years, rangers had a competitive advantage over poachers

thanks to radios. But with the recent proliferation of inexpensive cell phones, poachers can much more easily share information about rhino locations and evade patrols.

At the same time, patrollers have vast ranges to cover and may often be misdirected for reasons like attending to false breaches where an animal set off a fence alarm. Accurate and timely data is critical, but collecting and analyzing data from various partners across countries is challenging. Facilities within the parks are often remote and have little power, adding to the challenge of sharing timely information.

Using the cloud and AI to eliminate historical anti-poaching barriers

In the race to protect rhinos and other endangered species, new processes and technologies need to be deployed quickly to optimize resources and maintain an edge over poachers. Known for developing innovative solutions to combat wildlife crime, PPF set out to develop an integrated set of systems and technologies, or Smart Park, to do just that. The goal of the Smart Park solution is to make anti-poaching efforts more efficient by using technology to seamlessly bring together data from various sources to provide data-driven, near real-time intelligent decision-making.

In 2018, Microsoft Philanthropies awarded PPF a grant to support its move to the cloud and Microsoft AI for Earth awarded the foundation three grants to support various aspects of their work, including the Smart Park solution. The AI for Earth grant provides PPF with access to Microsoft cloud and AI tools to accelerate its work to prevent wildlife crime.

With the cloud and AI, historical barriers to anti-poaching efforts disappear. For example, the Intelligent Camera Trap, a key component of the Smart Park, removes the limitations of any standard, standalone commercial camera trap and transforms it into an "edge device" in an ecosystem-based solution.

> The Intelligent Camera Trap can send park rangers GPS coordinates and a photo within five minutes of identifying human activity.

Using Azure, many thousands of photos from the traps are processed in the cloud and reasoned over with Azure Cognitive Services. When human activity is identified, GPS coordinates and a photo are sent to park rangers within five minutes. As a result, rangers can respond quickly and effectively to capture poachers. The solution also provides a better idea of what to expect at a location, making it safer for rangers to do their job.

A crucial aspect of Smart Park development is the establishment of a cloud-based centralized environment, what PPF calls the "Central Nervous System" (CNS). The Microsoft grants enable PPF to move their

infrastructure to the cloud, where large volumes of data collected by various sensors will be aggregated, analyzed, and autonomously interrogated using customized Azure Cognitive Services—without the need for capital intensive and lengthy infrastructure purchase, configuration, and deployment.

Moving forward

PPF is currently deploying the Intelligent Camera Trap to a test location in the KwaZulu-Natal (KZN) province, a globally important rhino stronghold. The project is comprised of hundreds of edge devices providing unprecedented poacher detection within the KZN's Intensive Protection Zone. The foundation expects to deploy up to 600 camera traps in the KZN province by October 2018 and complete the initial integration of the CNS by May 2019. After deployment, PPF plans to scale up Smart Park as an anti-poaching service, distributed via the Azure Marketplace, to areas in southern Africa and beyond that are fighting organized wildlife crime.

About Peace Parks

Peace Parks Foundation (PPF) has been involved in establishing and managing transboundary conservation areas in southern Africa for over two decades. PPF's dream is to reconnect Africa's wild spaces—re-establishing, renewing, and preserving large functional ecosystems—to create a future for man in harmony with nature. PPF has been actively involved in establishing and developing 10 of the 18 transboundary conservation areas in southern Africa, called peace parks, and also provides strategic planning assistance to governments and other agencies in support of the parks, which combined cover roughly one million square kilometers.

Resources

Websites

Peace Parks Foundation
AI for Earth