Artificial Intelligence (AI) for Earth

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Access | Education | Innovation

Microsoft

AI for Earth
is part of Microsoft's sustainability mission

aimed at empowering people and organizations
to solve global environmental challenges
by increasing access to AI tools and educational
opportunities, while accelerating innovation.

Focus areas

AI for Earth

AGRICULTURE

In order to feed the world's rapidly growing population, farmers must produce more food, on less arable land, and with lower environmental impact.

WATER

In less than two decades, demand for fresh water (for human consumption, agriculture and hygiene) is projected to dramatically outpace supply.

BIODIVERSITY

Species are going extinct beyond the natural rate by orders of magnitude, driving the decay of key ecosystem services, like pollination, that humans depend upon.

CLIMATE CHANGE

An increasingly variable climate, extreme weather events, rising sea levels, higher global temperatures, and increased ocean acidity threaten human health, infrastructure, and the natural systems we rely on for life itself.

Commitments

AI for Earth

Increase Access

We are providing seed grants so researchers and organizations can gain access to cloud and AI computing resources.
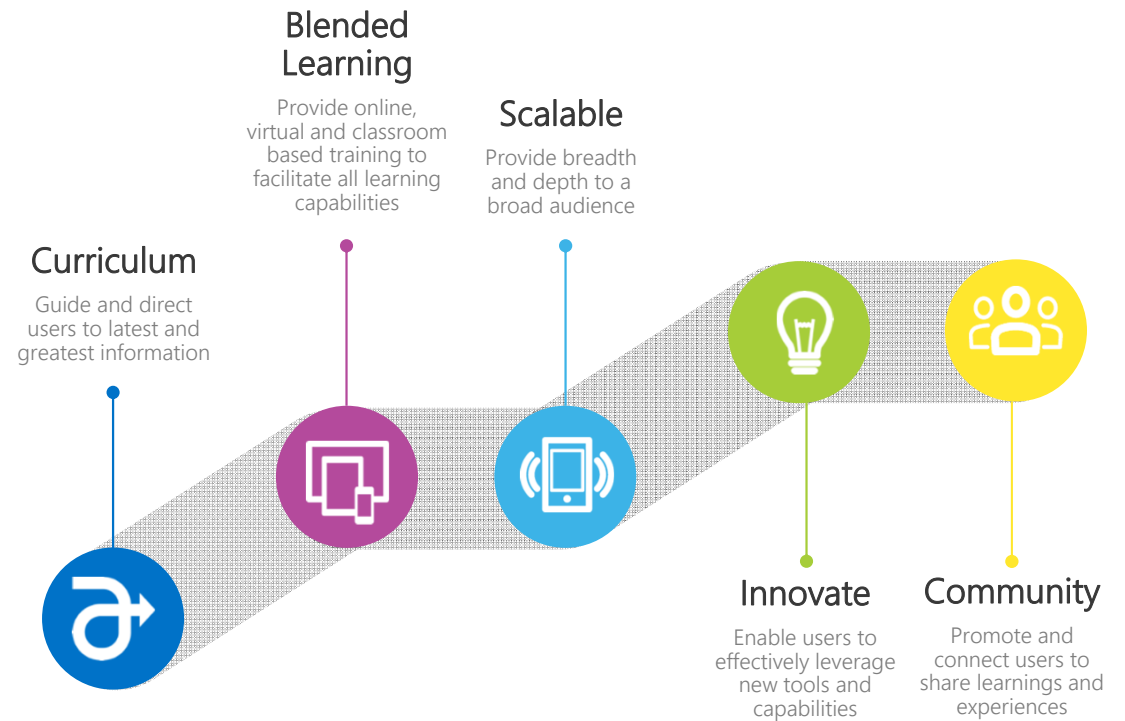
Provide Education

We are providing educational resources to make sure organizations know what is available, how to use it, and how it can meet their specific needs.

Fuel Innovation

We are accelerating the pace of innovation by showcasing lighthouse projects, publishing research, and collaborating with others to expand and grow initial projects.

AI for Earth Training

Provide a broad and integrated training solution that will enable users to learn AI tools and how to effectively leverage the tools to address important sustainability challenges.

Curriculum
Guide and direct users to latest and greatest information

Blended Learning
Provide online, virtual and classroom based training to facilitate all learning capabilities

Scalable
Provide breadth and depth to a broad audience

Innovate
Enable users to effectively leverage new tools and capabilities

Community
Promote and connect users to share learnings and experiences

Land Cover Mapping

AI for Earth

Giving organizations a faster, more effective, and lower cost land cover mapping tool to help them better analyze, monitor, and manage natural resources.

Challenge

Creating high-quality land cover maps with today's high-resolution imagery is a resource-intensive process. It can take up to a year to become available to the public, and is time consuming to sort, manage, and classify images into land cover data.

https://youtu.be/QKpOkQMilG4

Solution

Microsoft's goal is to help make the land cover mapping process faster, easier, and more accessible to everyone. We want to enable on-the-fly land cover mapping, and allow conservation groups to create high-resolution land cover maps with their own data; quickly develop accurate, actionable insights; and easily transfer maps and insights to other organizations.

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Chesapeake Conservancy
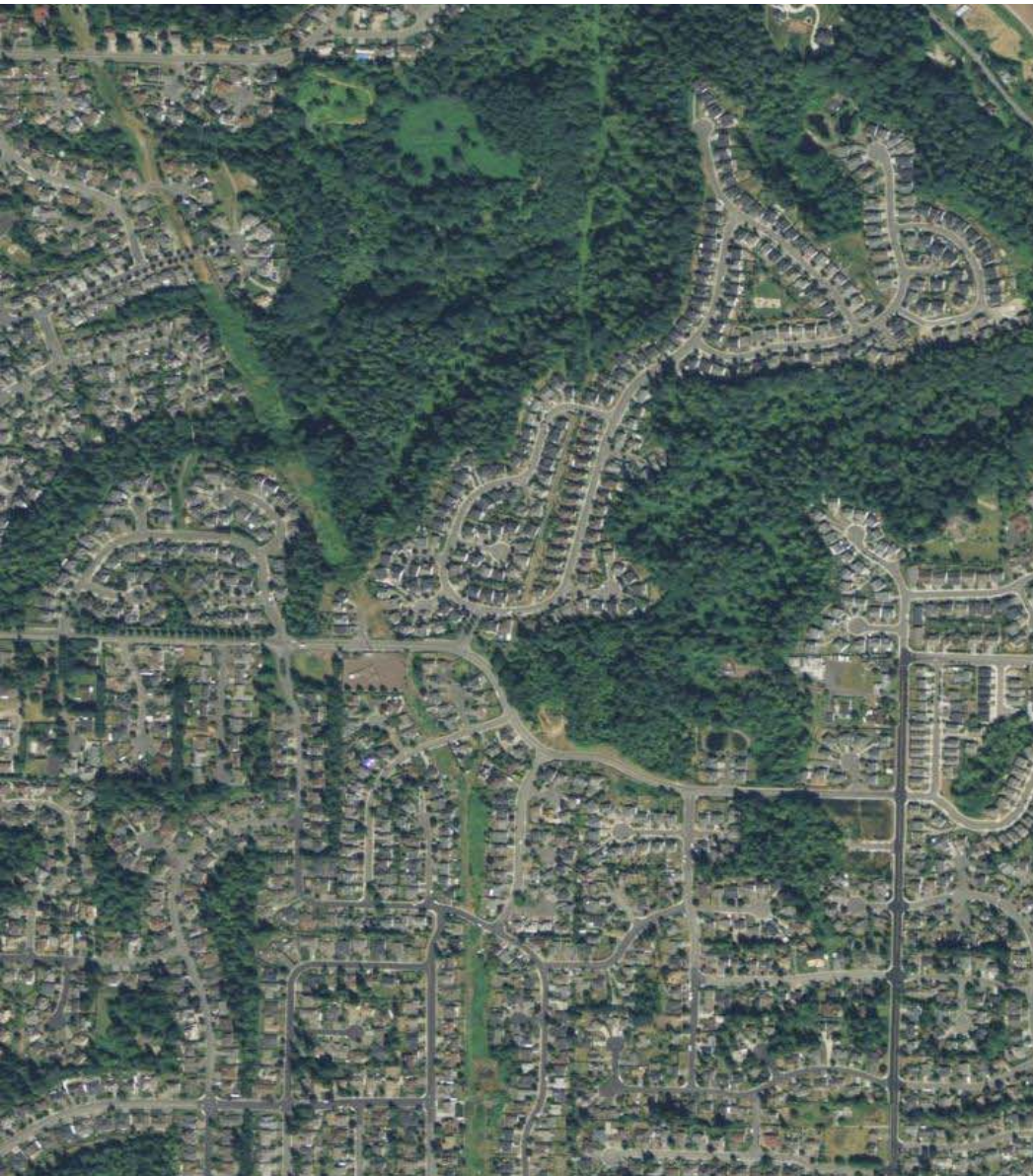
Water
Wetlands
Tree Canopy
Shrubland
Low vegetation
Barren
Structures
Impervious
Surfaces

WA DFW

Project Premonition

Detecting pathogens before they cause outbreaks by turning mosquitoes into devices that collect data from animals in the environment.

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Challenge

Nearly 75% of emerging infectious diseases originate from animals, yet it's difficult to track and monitor these diseases in order to prevent outbreaks. Early data is laborious, and is often collected by hand from potential disease sources in the environment, and sample analyses are time-consuming. Public health organizations need data as early as possible to predict disease spread and plan timely responses.

Solution

Microsoft and its partners are turning mosquitoes into field biologists by combining smart hardware, machine learning, and advanced cloud-based data analytics. When mosquitoes bite animals, they draw a few microliters of blood containing DNA that identifies the types of animals that were bitten. With advanced machine learning, this can help early detection of vector-borne diseases such as Zika and West Nile.

https://www.microsoft.com/en-us/research/project/project-premonition/

FarmBeats

Providing farmers with access to Microsoft Cloud and AI technologies, enabling data-driven decisions to help farmers improve agricultural yield, lower overall costs, and reduce the environmental impact of agricultural production.

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Challenge

By 2050, the demand for food is expected to outpace production by over 70%. Farmers need to access better data to maximize efficiency and yield, however, gathering data from farms is difficult due to low technology adoption and access rates, especially in rural areas.

Solution

FarmBeats uses Microsoft's machine learning (ML) algorithm to integrate sensor data with aerial imagery and other relevant data (such as weather, crop predictions, best practices) to deliver actionable insights to farmers, all at a fraction of the cost of existing solutions. This is a digital transformation of agriculture, at both small and large scales, that's critical to meeting 21st century food-supply challenges.

https://www.microsoft.com/en-us/research/project/farmbeats-iot-agriculture/

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Learn more at microsoft.com/aiforearth