FarmBeats for Students

Program overview

FarmBeats for Students is a **hands-on educational program** that brings precision agriculture directly into the classroom. The program consists of an affordable hardware kit and a no-cost curriculum aligned with rigorous educational standards.

Activities have been designed to give students direct experience with topics like **digital sensors, data analysis, and artificial intelligence (AI)**. Cultivating a new generation of talent in these fields will be critical to feed a growing population while conserving the planet's limited resources. FarmBeats for Students empowers educators to inspire their students with the exciting possibilities at the intersection of technology, agriculture, and sustainability.

Precision agriculture curriculum for classrooms

Learn more at www.aka.ms/FBFS

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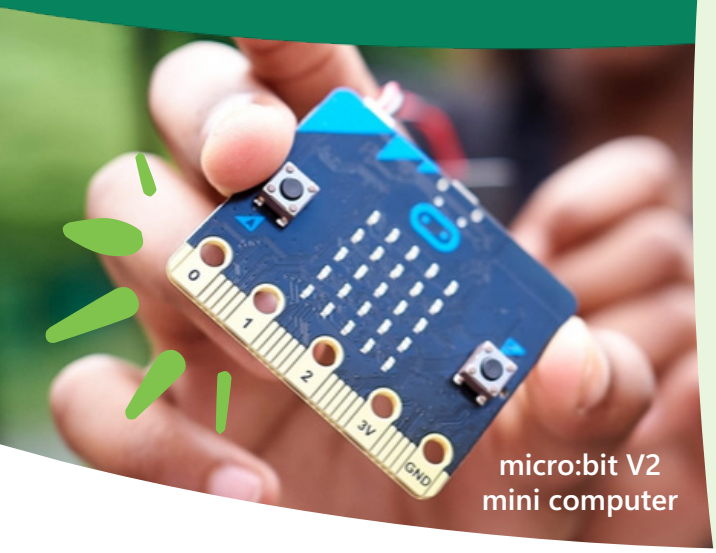
Learning progression

The no-cost curriculum for FarmBeats for Students progressively introduces students to data collection through digital sensors, data analysis, and AI. The curriculum is designed to be accessible to both educators and students who have no prior experience with these concepts.



micro:bit V2 mini computer

Section 1: Gathering data through sensors

Students assemble a plant monitoring kit, consisting of a micro:bit equipped with sensors. The kit enables them to gather data about their plants and view it live in Microsoft MakeCode. Using Microsoft Excel, they can see firsthand how data yields deeper insights.

Section 2: Analyzing "big data"

Students are introduced to data visualization tools in Excel. They engage with big data sets to extract intelligence and make decisions about the best locations for a greenhouse.

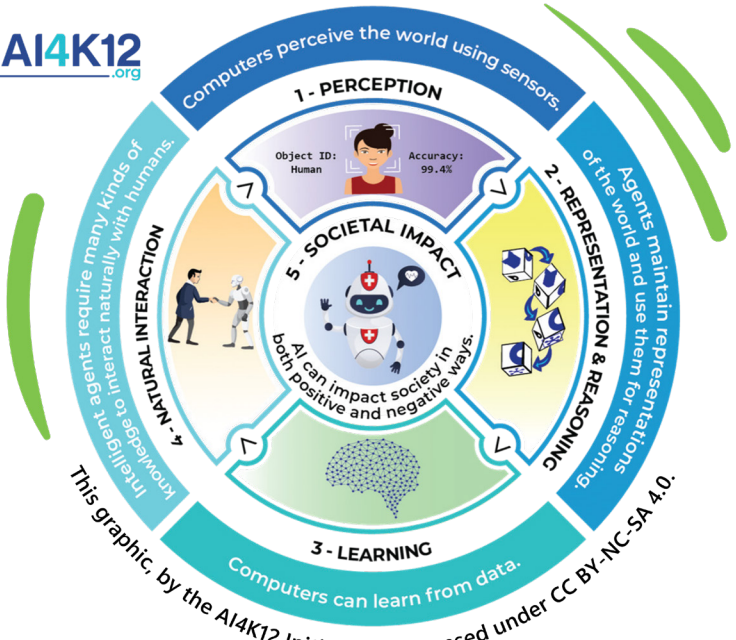
Section 3: Unlocking data insights with AI

Students explore AI by building their own machine learning models, which help detect nutrient imbalances in their plants and identify pests in their garden. The course also introduces Microsoft's Responsible AI principles and presents discussions around some of the challenges raised by AI.

Academic alignment

The curriculum is aligned to the "AI for K-12" guidelines, which are organized around five key concepts and define what every student should know about AI. The curriculum is also aligned to U.S. national math and science standards and the following guidelines:

- ☑ Computer Science Teachers Association (CSTA) Standards
- ☑ National Agriculture, Food & Natural Resources (AFNR) Career Standards
- ☑ United Nations Sustainable Development Goal 2: Zero Hunger



Technical requirements:
Sections 1 and 3 of the curriculum only require a device with an internet connection. Some activities in Section 2 require a desktop version of Microsoft Excel.

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