
SPARKNIX
IGNITE YOUR POTENTIAL NIX THE LIMITS

In a world powered by **artificial intelligence and technology**, enrolling Your Child in Sparknix's 15-week **AI & Machine Learning Course** is a bold step toward an extraordinary future.

Your Child's Gateway to a Tech-Driven World

Technology is the future. By learning AI now, Your Child will stay ahead, ready to lead in a **dynamic job market** and apply his skills to any passion—be it science, art, or **social impact.**

Your Child's Journey with Industry Experts

We will have **expert sessions** in which Your Child will connect with professionals like **software developers** who use **AI** to revolutionize their work. These inspiring sessions will show him how **AI transforms industries**, sparking ideas for his own projects and **future career**.

Your Child's Growth Through Parent-Teacher Collaboration

You're part of Your Child's journey! Join our periodic **parent-teacher interactions** during **expert sessions** to see his progress and discover how AI shapes the world. Together, we'll celebrate his achievements and ensure he thrives.

Your Child's Confidence as a Presenter and Leader

Beyond technical skills, Your Child will shine as a communicator. By presenting his projects, he'll develop soft skills like **professional presence** and **confidence**, preparing him to stand out in any academic or professional setting.

Your Child's Impact on His Community

Your Child won't just learn—he'll create. Through projects that address **community needs**, he'll develop **problem-solving and leadership skills**, aligning with the rigor of **Ivy League academics** and setting the stage for a **meaningful career**.

The detailed curriculum below outlines the course content, structure, and outcomes, all tailored to empower Your Child's success. With Sparknix, Your Child will become a leader ready to shape tomorrow's tech-driven world. We're excited to guide him on this **transformative adventure!**

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Artificial Intelligence & Machine Learning Course

Fun Tech and AI Learning for Kids

For Kids Ages 11–15 years

Help Your Child Discover Their Tech Talents

Discover an Amazing Learning Journey into Technology

Welcome to an exciting 15-week adventure in technology for kids ages 11-14! This isn't just a regular class, it's a fun journey where your child will learn to build apps, solve real problems, and develop skills that top companies love. With four sessions per week, kids will learn using fun tools and interactive platforms that make learning feel like playing.

Why This Course is Special:

In today's world, technology is everywhere—from video games to helpful apps. Learning tech skills early is like giving your child a superpower. They'll learn to create apps that can help their community, understand how Technology works and prepares for exciting future careers.

What Makes Our Course Fun:

Learning with Cool Tools

Using fun platforms like MIT Scratch Lab, kids create games, stories, and learn coding in a playful way.

Parent-Teacher Interaction

Every three weeks, we'll discuss your child's progress and celebrate their learning.

Real-World Learning

Meet experts who show how technology is used in exciting jobs and projects.

Sharing Their Work

Kids will present their projects, building confidence and communication skills.

What Students Will Learn

Create AI Apps

Students will build AI-powered applications through a kid-friendly interface that uses drag-and-drop blocks. They'll create apps that can suggest activities, identify patterns, and solve real-world problems - all without complex coding!

Learn to Code

Experience coding through a block-based programming environment. Kids learn by dragging and connecting blocks, making coding fun and accessible. Our visual programming approach helps students understand core concepts without getting overwhelmed.

Train AI Models

Students will learn to train their own AI models through simple drag-and-drop interfaces. They'll understand how AI thinks and learns, all through kid-friendly tools that make complex concepts easy to grasp!

Solving Real Problems

Students will apply their AI and coding skills to create solutions for their communities, schools, and the environment. Using our simple drag-and-drop tools, young innovators will build projects that make a real difference

Fun & Engaging

Real-World Impact

Future-Ready Skills

Flexible & Personalized

Fully Customizable Schedules:

Need more flexibility? Students can choose 5, 6, or 7 sessions per week to fit their schedule. We'll tailor the pace to meet your child's needs!

Why SparkNix Stands Out:

- ✓ **Innovative Learning:** Hands-on projects that spark creativity and problem-solving.
- ✓ **Flexible Scheduling:** Default of 4 sessions per week, or customize up to 7.
- ✓ **Personalized Support:** Tailored guidance to ensure your child thrives.
- ✓ **Future-Focused:** Learn to use AI responsibly and shape a better tomorrow.

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The 15-Week Adventure: Full Curriculum Plan

1 Introduction to Artificial Intelligence and Machine Learning

Session 1: Understanding Artificial Intelligence

Students learn what Artificial Intelligence (AI) is—computers doing smart things like recognizing patterns, making choices, or solving problems. They talk about AI in everyday life, like movie suggestions or chatbots, and do fun activities to see how AI works.

Vocabulary:

- **Artificial Intelligence (AI):** When computers act smart and do tasks like recognizing things or guessing what might happen.

Session 2: Introduction to Machine Learning

Students discover machine learning, a part of AI where computers get better by learning from examples. They do hands-on activities, like teaching a virtual robot to spot fish by looking at things like color, and use a step-by-step method to understand how machines learn.

Vocabulary:

- **Machine Learning:** When computers learn from examples to find patterns and make choices without being told exactly what to do.
- **Problem Solving Process:** A clear way to tackle problems by finding the issue, picking data, training a computer, checking results, and thinking about how it affects people.

Exploring Types of Machine Learning

Session 3: Building Mental and Machine Learning Models

Students think about how they learn new things and compare it to how computers learn. They do a color activity to group things without labels, like computers do, and talk about how computers spot patterns using details.

Vocabulary:

Model: A computer program that makes choices or guesses based on information.

Unsupervised Learning: When a computer finds patterns in information without being given examples with answers.

Features: The details or traits a computer uses to make choices.

Session 4: Supervised and Unsupervised Learning

Students play a game called "Green Glass Door" to learn how computers use examples with answers to find patterns. They also look at examples to understand the difference between learning with and without human help.

Vocabulary:

Supervised Learning: When a computer learns from examples with answers provided by people.

Training: Giving a computer example to help it get better at making guesses or choices.

Label: The answer or group a computer tries to figure out.

2 AI Innovations and Societal Impact

Session 1: Exploring AI Applications

Students explore real-world AI tools, like Seeing AI, which helps people who can't see well. They look at how AI solves problems, what information it uses, and how it works with people, while talking about a step-by-step way to use AI for big challenges.

Vocabulary:

- **Seeing AI:** An AI tool that helps people who can't see by describing things, reading text, or naming objects.

Session 2: Researching AI Innovations

Students research cool AI tools, looking at what problems they solve, what information they use, and how they affect people. They share what they find and talk about good things and unexpected problems, like fairness or new uses.

Vocabulary:

- **Innovation:** Using AI to make new tools or improve how things work, making tasks easier or better.
- **Unintended Consequence:** Surprising results from AI tools that can be good, bad, or lead to new ideas.

Patterns and Decision-Making in AI

Session 3: Understanding AI Decision Models

Students learn how AI makes choices by looking at a shoe recommender app. They try a simple app that picks shoes randomly, talk about its problems, and suggest ways to make it better, learning how computers use information to guess.

Session 4: Improving Models with Data Patterns

Students improve their understanding of how AI makes choices by trying a better shoe recommender that uses a decision tree and survey answers. They look at patterns in the answers to suggest shoes and learn how details help make good guesses.

Vocabulary:

Decision Tree: A way for a computer to make choices by asking a series of questions based on details.

3 Classification Models in Machine Learning

Session 1: Introduction to Classification

Students learn how computers sort things into groups, like separating fruits from vegetables. They do a fun activity to pick details like sweetness to sort foods, acting like a computer that groups things.

Vocabulary:

- **Categorical Data:** Information that can be put into groups, like fruits or vegetables.
- **Classification:** Sorting information into groups based on its details.

Session 2: Building and Testing Classification Models

Students do an activity where they plot foods on a graph using sweetness and ease of eating, then draw a line to separate fruits from vegetables. They test their sorting with different foods and talk about how to make it better.

Introduction to AI Lab and Model Training

Session 3: Exploring AI Lab for Classification

Students start using AI Lab, a tool where they pick details to teach a computer to sort shapes. They try different sets of information, spot patterns in details like color, and teach the computer to get good results, talking about how choosing details matters.

Vocabulary:

AI Lab: A tool for building and testing computer programs by picking details and teaching with information.

Accuracy: How often a computer's guesses are correct, shown as a percentage.

Session 4: Building Recommendation Models

Students use AI Lab to teach a computer to suggest things, like pizza toppings, based on survey answers. They look at information to find strong connections, teach the computer to get at least 80% correct, and talk about how human choices affect results.

Vocabulary:

Recommendation Model: A computer program that guesses what people might like based on patterns in information.

4 Creating Apps with Machine Learning

Session 1: Introduction to App Lab and Model Integration

Students learn about App Lab, where they add computer programs to make a book suggestion app. They look at the app's design, talk about survey questions for suggestions, and think about whether questions like gender are okay to use.

Vocabulary:

App Lab: A place to build apps and add computer programs to make guesses.

Model Import: Adding a trained computer program to an app to make it work.

Session 2: Building and Customizing the App

Students use App Lab to add a book suggestion program, create a welcome screen and choose a style. They find important coding parts, like buttons, and test the app to make sure it works right.

Vocabulary:

Event: Something a user does, like clicking a button, that makes the app do something.

Welcome Screen: The first screen in an app that shows information or helps users start.

Evaluating Bias in Machine Learning Models

Session 3: Investigating Bias in AI Models

Students explore a Medical Priority app to see how computer programs can be unfair. They test how the app picks patients, look at details like age or symptoms, and talk about whether the choices seem fair or unfair.

Vocabulary:

Bias: When a computer program's choices unfairly help or hurt certain people or groups.

Session 4: Using Model Cards to Evaluate Models

Students learn about Model Cards, which share details about computer programs to spot unfairness. They check Model Cards for medical programs, look at how fair the information is, and suggest fair programs for hospitals.

Vocabulary:

Model Card: A document that explains a computer program's information, results, and possible unfairness.

Data Representativeness: How well a program's information includes different people and situations to make fair guesses.

5 Training and Documenting Models

Session 1: Training and Saving Models in AI Lab

Students teach and save computer programs in AI Lab using a zoo dataset. They pick an answer to guess and choose details, making programs to share animal facts based on user choices, and write down their steps.

Session 2: Importing Models and Creating Model Cards

Students add a trained program to App Lab to start building a zoo app. They make a Model Card to list the program's details, information, and choices, and talk about why Model Cards help make apps clear and fair.

Enhancing Apps with Model Cards

Session 3: Importing Models with Numerical Data

Students practice adding a Pet Recommender program to App Lab, focusing on programs with number-based information. They test the app for pet suggestions, talk about number vs. group information, and find problems in how the app feels to use.

Vocabulary:

Numerical Data: Information that can be counted or measured, like a pet's size or age.

Session 4: Improving User Experience with Model Cards

Students use Model Cards to make the Pet Recommender app better by updating detail descriptions, adding helpful text, and improving design parts like screens. They talk about how Model Cards help make apps easier to use.

Vocabulary:

User Experience: How easy and fun it is to use an app, based on its design and clear instructions.

6 Numerical Predictions in Machine Learning

Session 1: Predicting with Numerical Data

Students do a fun activity pretending there's a zombie outbreak, using number information from another town to guess how many zombies might be in their town. They compare details to find patterns and make guesses.

Vocabulary:

Similarity-Based Prediction: Guessing by comparing new information to existing information with similar details.

Session 2: Evaluating Model Accuracy

Students check their zombie guesses against real information, figuring out how accurate they are by looking at exact matches or close guesses (within 5 or 20). They talk about when "close enough" guesses are okay or when exact guesses are needed.

Vocabulary:

Model Evaluation: Checking how well a computer program's guesses match real answers.

Predicting Numerical Data in AI Lab

Session 3: Understanding Numerical Data

Students learn about number information and how it helps computers guess things. Using AI Lab, they look at a safari dataset to guess how many lions are in a park, using graphs to spot connections between details like antelope numbers and lion sightings.

Vocabulary:

- **Scatter Plot:** A graph that shows how two number-based details are related.

Session 4: Training Models with Numerical Features

Students keep exploring the safari dataset in AI Lab, looking at details like temperature or day of the month. They teach a computer to guess lion sightings with at least 80% correct answers, picking the best details based on patterns.

7 Customizing Multi-Screen Machine Learning Apps

Session 1: Customizing App Code and Design

Students explore a single-screen Raspado Recommender app in App Lab, updating code to collect details using getText() blocks. They change design parts

to make the app work well, learning how code and design work together for good guesses.

Vocabulary:

- **getText():** A code tool that grabs what a user types or picks in App Lab.
- **Design Element:** A part of an app's look, like buttons, text boxes, or menus.

Session 2: Building Multi-Screen Apps

Students make a multi-screen Driver Alert app, putting details like weather or time on different screens. They update code and design using Model Card information, test the app, and talk about why multiple screens are good or tricky.

Vocabulary:

- **Multi-Screen App:** An app with different screens to show information or collect answers one at a time.

Developing an AI Code of Ethics

Session 3: Exploring AI Ethics

Students talk about real and made-up AI examples, spotting when AI is used in good or bad ways. In small groups, they pick an AI ethics topic, watch videos or read articles, and take notes on challenges and what they mean.

Vocabulary:

Ethics: Rules for doing the right thing when building or using AI.

AI Ethics: Making sure AI is fair, clear, and helpful by following good rules.

Session 4: Creating an AI Code of Ethics

Students work in groups to create fair rules based on their research. They combine their ideas into a class "AI Code of Ethics" (like a slide show or document) for AI makers and lawmakers to use responsibly.

Vocabulary:

Code of Ethics: A list of rules to make sure AI is built and used the right way.

Ethical Principle: A specific rule to fix an AI problem, like making things fair or responsible.

8 Creating a Machine Learning App Project

Session 1: Exploring Datasets and Training Models

Students pick a real-world dataset and look at its details and possible answers. They choose an answer to guess, pick at least two details, and teach a computer in AI Lab, writing down their results and saving the program.

Vocabulary:

Dataset: A collection of real information with details and answers used to teach computers.

Session 2: Building and Reflecting on the App

Students add their trained program to App Lab to make a custom app, adding things like a welcome screen, style, and multiple screens. They fill out a Model Card, check for unfairness, and think about what's good, what can be better, and how the app could be used.

Planning Machine Learning Solutions for Community Issues

Session 3: Refining Issue Statements and Goals

Students improve their problem statements to focus on users, be broad, and doable. They use a "5 Why's" activity to understand the main problem (like feeling alone) and set clear goals for their app to help the community.

Vocabulary:

Issue Statement: A clear description of a community problem an app will try to fix, focusing on users.

Core Issue: The main problem or need behind an issue, found by asking why it happens.

Session 4: Exploring Datasets for App Development

Students look for datasets that could help their app ideas (like what activities people like). They check datasets for useful details and answers, talk about how information can help make choices or suggestions, and plan how their app will work.

9 Designing Surveys for Machine Learning Apps

Session 1: Planning Survey Questions

Students think about Hawa's Club Recommender app and come up with questions to find out which school clubs people might like. They make three questions, decide if they're group or number questions, and plan answer choices to match the goal (club suggestion).

Session 2: Creating and Testing Surveys

Students use a Google Form template in Code Studio to make a Club Recommender survey, adding their questions with both group and number answers. They ask friends to fill it out, look at the results for patterns, and talk about how to include all kinds of people.

Vocabulary:

- **Survey:** A way to collect information from people to teach a computer.
- **Data Trends:** Patterns in survey answers that help a computer make guesses.

Importing and Cleaning Survey Data in AI Lab

Session 3: Importing Survey Data

Students learn to view survey answers in Google Sheets and save them as a CSV file. They upload Kim's Club Recommender survey to AI Lab, rename columns clearly, and teach a computer to get at least 70% correct using a few details, writing their steps in a Model Card.

Vocabulary:

CSV File: A file that stores information in a simple way for computers to use.

Session 4: Cleaning and Validating Data

Students check Isaac's survey answers, fix mistakes in Google Sheets to work with AI Lab, and upload the clean information. They make sure it works and talk about when it's okay to change answers to improve guesses without making things unfair.

Vocabulary:

Data Cleaning: Fixing or removing mistakes in information so a computer can use it.

10 Troubleshooting Machine Learning Models

Session 1: Diagnosing Model Issues

Students look at survey information from a pretend team (Zoey, Nico, Isaac, Kim) in AI Lab to figure out why their Club Recommender isn't working well. They find problems like bad detail choices or unfair information and write down fixes.

Vocabulary:

Feature Selection: Picking the right details to make a computer's guesses better.

Data Bias: When survey information unfairly focuses on some people, making guesses wrong.

Session 2: Strategies for Accurate Models

Students talk about ways to avoid information problems, like asking all kinds of people, and help Hawa plan her survey. They help Isaac find other datasets for a Loneliness Score app, pick details for good guesses, and explain what the app can and can't do.

Vocabulary:

Intended Uses and Limitations: Parts of a Model Card that explain what a program is for and what it might not do well.

Designing a User-Friendly Machine Learning App

Session 3: Importing and Setting Up the App

Students add the Club Recommender program to App Lab and make sure it works. They update detail text in Design Mode to match survey questions, using the Model Card for accuracy, and start making the app easy to use.

Vocabulary:

Design Mode: A tool in App Lab to change how an app looks and works.

Session 4: Enhancing App Usability

Students add a welcome screen with a style, text about the app's goal, accuracy, and information collection, and a "Next" button with an image and OnEvent block. They test the app, check it meets goals, and try more design ideas.

Vocabulary:

OnEvent Block: A code block in App Lab that makes things happen when a user does something, like clicking.

11 Designing an AI App for Social Good

Session 1: Defining the Issue and Planning the App

Students find a community problem using a "5 Why's" method to make a clear, user-focused problem statement. They think of app ideas that make choices, suggestions, or guesses, and plan how to collect information from different people.

Vocabulary:

Machine Learning App: An app that uses information to make choices, suggestions, or guesses to fix a problem.

Session 2: Collecting Data and Developing the App

Students make and share a survey to collect information, teach a computer in AI Lab, and create a Model Card. They add the program to App Lab, build an easy-to-use app, test it with five people, and prepare a presentation about the app's goal, information, design, and ways to improve.

Pokémon Image Classifier

Session 3: Understanding Image Classification

Students learn how computers sort pictures by making a project game that guesses Pokémon types (like Fire or Water) based on how they look. They talk about how details like color and shape help the computer guess.

Vocabulary:

Image Classification: When a computer sort pictures into groups based on what they show.

Visual Feature: Something in a picture, like color or shape, that helps a computer guess.

Session 4: Building the Pokémon Game

Students follow a worksheet to make the Pokémon classifier game, teaching the computer with sample Pokémon pictures and testing how well it guesses. They think about how choosing details affects guesses and talk about possible unfairness in picture-based programs.

Vocabulary:

Training Data: Pictures and answers used to teach a computer to spot patterns.

12 Smart Classroom Assistant

Session 1: Designing a Text-Based Assistant

Students start a project to make a smart classroom assistant that understands text commands to control things like lights or a projector. They think of commands and talk about how text details help the computer work.

Vocabulary:

Text Recognition: When a computer understands and sorts text to do tasks.

Digital Assistant: An AI tool that follows user commands, often using text or voice.

Session 2: Implementing and Testing the Assistant

Students use a worksheet to code the assistant, teaching it with sample text commands and testing what it does. They check how well it works and talk about making sure commands are fair and include everyone.

Vocabulary:

Supervised Learning: Teaching a computer with examples that have answers to sort things.

Voice Tuner Game

Session 3: Exploring Sound Recognition

Students start a project to make a game that recognizes sung music notes using a ready-to-use sound program. They talk about how sound information is different from number or group information and think of ways to make the game fun.

Vocabulary:

- **Sound Recognition:** When a computer finds patterns in sounds, like music notes.
- **Pretrained Model:** A computer program already taught and ready to use for tasks like sound spotting.

Session 4: Building and Customizing the Game

Students follow a worksheet to build the Voice Tuner game, adding the sound program and designing it with visuals (like characters reacting to notes). They test the game and think about problems, like background noise messing up guesses.

Vocabulary:

- **Pitch Estimation:** Figuring out the sound's note by checking its frequency.
- **User Interface:** The look and feel of a game that makes it fun and easy to use.

13 Make Me Happy Character

Session 1: Understanding Sentiment Analysis

Students start a project to make a character that smiles for nice words and cries for mean ones, using a tool to understand text feelings. They talk about how text feelings connect to fair AI and think of kind and unkind phrases to teach the computer.

Vocabulary:

- **Sentiment Analysis:** A tool that sorts text as happy, sad, or neutral.
- **Text Feature:** Something in text, like word choice, that shows its feeling.

Session 2: Creating the Sentiment Character

Students use a worksheet to code the character, teaching it with sample phrases and testing how it reacts. They think about making sure the computer doesn't misunderstand neutral words and talk about making the character fair for everyone.

Vocabulary:

- **Ethical AI:** Building AI that is fair, clear, and kind to users.

Catch the Ball Game

Session 3: Predicting Ball Trajectories

Students start a project game where a computer guesses where a bouncing ball will land. They talk about number details like ball speed and angle and plan how the game will look.

Vocabulary:

Regression: A way for a computer to guess numbers, like where a ball will land.

Numerical Feature: A number detail, like speed or angle, used to make guesses.

Session 4: Building and Testing the Game

Students follow a worksheet to make the Catch the Ball game, teaching the computer with sample ball paths and testing its guesses. They check how close the guesses are and talk about uses, like in sports, and what the program might not do well.

Vocabulary:

Model Accuracy: How close a computer's number guesses are to the real answers.

14 Snap! Card Game

Session 1: Designing an Image-Based Card Game

Students start a project card game that recognizes card pictures by sorting them. They talk about how details like shape or color help sort cards and plan the game's fun parts.

Vocabulary:

- **Model Robustness:** A computer's ability to guess right even if things change, like lighting.

Session 2: Implementing and Testing the Game

Students use a worksheet to code the Snap! game, teaching the computer with card pictures and testing how well it recognizes them. They think about problems, like different lighting affecting guesses, and talk about ways to make the program stronger.

School Library Recommender

Session 3: Planning a Recommendation System

Students start a project to make a school librarian that suggests books based on number information (like age or reading level). They talk about how number details help make suggestions and plan the librarian's look.

Vocabulary:

Recommendation System: A computer program that suggests things, like books, based on user information.

Session 4: Building and Evaluating the Recommender

Students follow a worksheet to code the librarian, teaching it with sample information and testing its book suggestions. They make a Model Card to explain the program and talk about making sure suggestions work for all students.

15 Tourist Info App

Session 1: Designing a Multi-Screen Recommendation App

Students start a project to make a tourist attraction suggester based on what people like. They think of text details (like favorite activities) and plan an app with multiple screens to make it easy to use.

Vocabulary:

Training Bias: When a computer's suggestions are wrong because the information isn't fair or complete.

Session 2: Developing and Testing the App

Students use a worksheet to code the Tourist Info app, teaching it with sample interest information and testing suggestions across screens. They talk about unfair information and how to make suggestions work for all kinds of tourists.

Storyteller Generator

Session 3: Introduction to Generative AI

Students learn about generative AI by starting a project that makes new stories based on user ideas. They talk about how computers create text and think of story themes to make the project exciting.

Vocabulary:

Generative AI: AI that makes new things, like stories or text, based on what it's learned.

Language Model: A computer program that creates or understands text, used for storytelling.

Session 4: Building and Reflecting on the Storyteller

Students follow a worksheet to code the Storyteller, using a ready-to-use text program to make stories and designing the look. They test the app, make a Model Card, and talk about making sure stories are appropriate and include everyone.

What Your Child Will Learn

Tech Skills

Create fun apps and learn how computers think using simple, interactive tools.

Smart Choices

Learn to make fair and kind decisions when using technology.

Help Others

Design apps that can make a difference in your community.

Build Confidence

Share your work and become a great communicator.

Future Ready

Gain skills that top schools and companies love.

Ready to Enroll?

Start your child's journey into the exciting world of AI and tech!

- ✓ 15-week comprehensive curriculum
- ✓ Expert instructors & mentors
- ✓ Flexible scheduling options

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