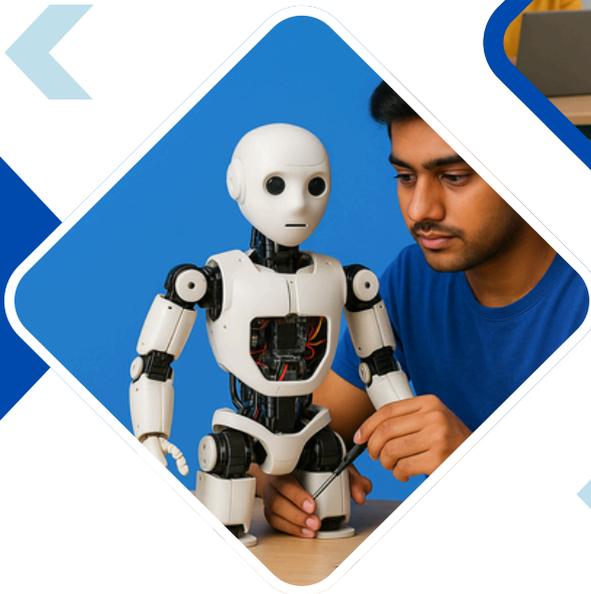
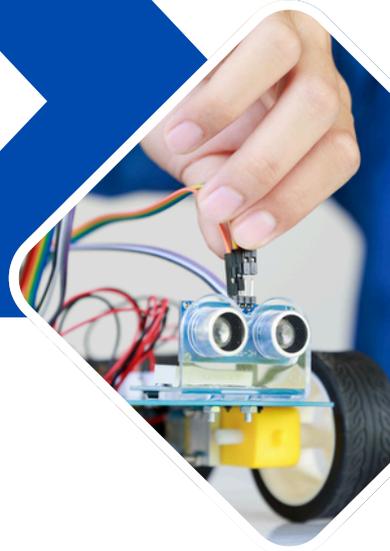


# BOTIXBO

# Robotics & AI LAB SETUP Proposal

AI, Robotics, IoT & Coding  
made simple for schools



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[www.botixbo.com](http://www.botixbo.com)

## Agenda

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## About Company

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**Botixbo** is more than just a robotics company, it's a movement to transform the way young minds in schools engage with science and technology. We believe that every child has the potential to innovate, and our mission is to provide them with the right tools, structured learning, and guided mentorship to explore the world of **Robotics, Artificial Intelligence, and the Internet of Things (IoT)**.

Founded with the vision of bridging the gap between classroom education and real-world technology, Botixbo has designed a **comprehensive ecosystem for schools**. This ecosystem includes **custom lab setups**, a **year-long curriculum (Classes 3–12)**, and **teacher training** programs that together create an innovation-driven environment within every institution we partner with.

Our curriculum is carefully tailored to be **age-appropriate yet aspirational**. Younger students start with **creative kits like Aviskaar MEX** and block-based programming to learn the fundamentals of building and logic. As they progress, they transition into **Arduino, Raspberry Pi, AI projects, IoT dashboards, and advanced robotics systems**, giving them exposure to the same technologies powering the industries of tomorrow.



## Who Are We

We are Botixbo, an education technology company dedicated to bringing the future of learning into today's classrooms. Our team is a blend of **engineers, educators, and innovators** who share one common goal: to make **Robotics, Artificial Intelligence, and IoT** accessible to every student from Class 3 to Class 12.

At Botixbo, we believe that true learning happens when **theory meets practice**. Our work goes beyond just providing kits and tools, we **transform schools into hubs of innovation** by setting up fully equipped labs, delivering structured curricula, and training teachers to guide the next generation of tech leaders.

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LAB Packages

DESIGNED CURRICULUM  
ALIGNED TO NEP 2020, ICSE &  
CBSE AI GUIDELINES

50+

Hands-on projects  
per year per class

11+

Industrial Experience in  
Robotics & AI

## Our Mission

At **Botixbo**, our mission is to **ignite curiosity, inspire creativity, and empower students with future-ready skills** in Robotics, Artificial Intelligence, and IoT. We are committed to transforming traditional classrooms into **innovation-driven learning spaces** where young minds don't just consume technology but learn to **create, control, and innovate with it**.

Our mission is not just to teach technology, it's to **shape innovators, problem solvers, and leaders** who will build the future.

We aim to:

- Make **AI and Robotics education** accessible to every school, from Class 3 to Class 12.
- Provide **structured, age-appropriate curricula** that grow with students' skills.
- Build **fully equipped innovation labs** that foster hands-on learning and experimentation.
- Empower **teachers through training and resources**, ensuring effective delivery of cutting-edge tech education.
- Prepare students for **21st-century careers** by nurturing problem-solving, critical thinking, and teamwork.



## Problem

- **Outdated Education Systems:** Most schools still rely heavily on rote learning and textbook-based teaching. Students rarely get exposure to **hands-on STEM education** that connects theory with real-world applications.
- **Lack of Access to Emerging Technologies:** Critical 21st-century skills like Robotics, Artificial Intelligence, and IoT are either absent or offered only as optional clubs. This leaves the majority of students unprepared for the future workforce.
- **Innovation Divide:** While global education is rapidly moving towards AI-driven learning, many schools in India and similar markets are left behind, creating a growing gap between students' potential and the opportunities available.



**80%**

Schools rely on rote learning, no STEM labs

**20%**

Teachers feel confident teaching Robotics/AI.

**80%**

Future jobs will need AI/digital skills.

## Meet Our Co-Founders

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**Deepak Singh**  
Co-Founder  
DGM (Data & AI), Jio Platforms  
Indian School of Business, (ISB)  
Hyderabad



**Amritansh Ranjan**  
Co-Founder  
Gold Medalist (Robotics) – IIT Bombay  
Deep-tech innovator & curriculum  
architect

**Together, we're bringing real-world industry tech to school classrooms to raise a generation of thinkers, builders, and leaders.**

# BOTIXBO



## LAB SETUP PACKAGES

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## BOTIXBO ROBOTICS & AI LAB PACKAGES

To empower schools with future-ready Robotics & AI education (Classes 3rd–12th), Botixbo offers **three flexible packages** — **Basic, Standard, and Advanced**. Each package enables a complete year-round curriculum, hands-on projects, and exposure to AI, IoT, and Robotics, but differs in **depth, scale, and resources**.

### BASIC PACKAGE (₹3.0 - 3.5 LAKHS)

- **Coverage:** Supports all classes (3rd–12th) with essential kits and boards.
- **Components:**
  - Core microcontrollers (Arduino Uno/Nano, basic sensors).
  - Introductory robotics (Aviskaar kits, basic motors & construction sets).
  - Limited IoT exposure (basic NodeMCU, ultrasonic, IR, temperature sensors).
- **Outcome:** Students gain foundational coding, electronics, and robotics knowledge with simplified AI demos.

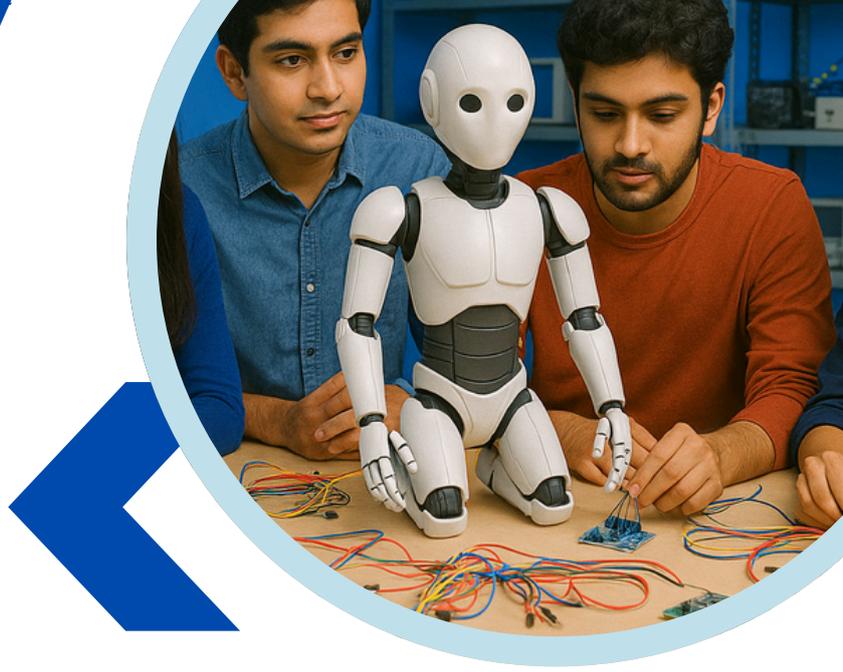
### STANDARD PACKAGE (₹6.0 - 6.5 LAKHS)

- **Coverage:** End-to-end learning from basics to mid-level AI & IoT projects.
- **Components:**
  - Wider range of microcontrollers (Arduino Mega, ESP8266, Raspberry Pi).
  - Extended robotics kits (servo motors, stepper motors, mechanical kits).
  - Strong IoT setup (RFID, soil moisture, PIR, relays, MQ gas sensors).
  - Starter AI modules (camera integration, Python-based Raspberry Pi AI).
- **Outcome:** Enables students to build advanced robotics prototypes, IoT solutions, and AI experiments suitable for school exhibitions, competitions, and hackathons.

### ADVANCED PACKAGE (₹9.0 - 9.5 LAKHS)

- **Coverage:** Comprehensive AI, Robotics, and IoT ecosystem with professional-grade tools.
- **Components:**
  - Full spectrum electronics (Arduino, multiple Raspberry Pi kits, advanced shields).
  - AI & ML ready (high-end Raspberry Pi 4, multiple cameras, pre-loaded AI SDs).
  - Advanced robotics kits (metal gear servos, industrial-grade motors, mechanical construction sets).
  - Complete IoT & sensor suite (humidity, pressure, force, gas, GPS, GSM, cloud integration).
  - Tools & consumables for independent student projects (soldering, multimeters, toolkits).
- **Outcome:** Students not only learn but innovate real-world solutions AI vision projects, smart city prototypes, automation models preparing them for national/international competitions and higher-education readiness.





## Course Curriculum

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## Course Content & Training

The **Botixbo Curriculum** is designed as a **progressive, 10-month learning pathway** for **Classes 3 to 12**, ensuring that students gradually move from basic robotics and block-based coding to advanced AI, IoT, and machine learning applications. Every module is structured to **combine theory, practical activities, and real-world projects**, so students not only learn concepts but also apply them in meaningful ways.

At the foundation level (Classes 3–5), students work with **Aviskaar kits, graphical programming, and simple sensors** to build interactive projects like smart lights, obstacle-avoiding cars, and fun coding games. As they advance (Classes 6–8), they transition into **Arduino, Raspberry Pi, IoT dashboards, and introductory AI tools**, creating projects such as smart weather stations, home automation systems, and AI-powered recognition demos. For senior classes (9–12), the curriculum emphasizes **AI, data science, and advanced robotics**, guiding students through projects like **AI chatbots, computer vision applications, IoT-based smart campuses, and capstone innovation challenges**.

Each year's course ensures a balance of STEM fundamentals, hands-on exploration, and future-ready tech exposure, making Botixbo's program a complete pathway from curiosity to innovation.

The program is delivered by our **experienced trainers**, with **two trainers assigned per class** to ensure personal guidance and hands-on support. The **training cost is ₹90,000 per month**, covering both trainers and all teaching resources for structured delivery. This guarantees that students, teachers, and schools experience the **highest quality robotics and AI education** in a sustainable and impactful way.

### Highlights:

- **2 experienced trainers** dedicated per class for personalized learning.
- Single **flat fee of ₹90,000 per month per class**, regardless of level.
- Covers **curriculum delivery, hands-on training, and project mentorship**.
- Designed for **consistent, high-quality outcomes across all classes (3–12)**.

## CLASS 3 - AI & ROBOTICS CURRICULUM

### MONTH 1: WHAT IS A ROBOT?

- Introduction to robots in stories & real life.
- **Activity:** Kids design a “dream robot” with MEX kit’s mechanical parts.

### MONTH 2: LET’S START CODING

- Learn block coding on Aviskaar software (similar to Scratch).
- **Activity:** Program a cartoon animation → robot on screen moves & talks.

### MONTH 3: LIGHTS & COLORS

- Robots can blink lights.
- **Activity:** Program MEX LED to act like a traffic light (red-yellow-green).

### MONTH 4: MUSIC & FUN

- Robots can make sounds.
- **Activity:** Create a “touch piano” → press button, buzzer plays sound.

### MONTH 5: ROBOTS THAT MOVE

- Build a moving car robot.
- **Activity:** Students assemble MEX motors + wheels → code it to move forward/backward.

### MONTH 6: ROBOTS THAT SENSE

- Robots use sensors to detect things.
- **Activity:** Make an Obstacle Avoidance Car → robot stops if sensor detects an object.

### MONTH 7: WEATHER AROUND US

- Robots can sense environment.
- **Activity:** Program MEX to measure classroom temperature & show on screen.

### MONTH 8: AI IS MAGIC (TEACHER DEMO)

- Robots can “see” faces & hands.
- **Activity:** Teacher connects AI camera add-on → kids show smile/thumbs up to trigger LEDs.

### MONTH 9: ROBOTS THAT READ CODES (TEACHER DEMO)

- Robots can read QR codes.
- **Activity:** Teacher demo: MEX AI module scans a QR code → robot greets with sound/LED.

### MONTH 10: SHOWCASE PROJECT (TEAM WORK)

- Students build a project combining skills learned.
- **Project Idea:** Smart Classroom Robot
  - Auto lights (with LDR sensor).
  - Auto fan (with temperature sensor).
  - AI camera demo (smile detection).

## CLASS 4 – AI & ROBOTICS CURRICULUM

### MONTH 1: REVISITING CODING & ROBOTS

- Quick recap of Class 3 basics (block coding, lights, sounds).
- **Activity:** Make a Scratch animation where a robot greets students.

### MONTH 2: CODING WITH EVENTS & LOGIC

- Learning “If-Then” conditions in block coding.
- **Activity:** Make a game where pressing a key moves a character and plays a sound.

### MONTH 3: BLINKING LIGHTS & TRAFFIC SIGNALS

- Using LEDs to simulate traffic lights.
- **Activity:** Build a traffic light robot with LEDs + block coding.

### MONTH 4: SOUND & MOTION PROJECTS

- Integrating buzzer + motors.
- **Activity:** Build a car robot that honks when moving forward.

### MONTH 5: ROBOTS THAT FOLLOW RULES

- Understanding sensors (IR/Ultrasonic).
- **Activity:** Line Follower Robot (robot follows a black path).

### MONTH 6: SMART SENSING DEVICES

- Robots responding to their environment.
- **Activity:** Build a sound-activated lamp (clap → LED turns on).

### MONTH 7: STORYTELLING WITH ROBOTICS

- Combine coding & robotics into storytelling.
- **Activity:** Build a robot character (with LEDs & buzzer) that “acts” in a Scratch story.

### MONTH 8: INTRO TO IOT CONCEPTS (SIMPLIFIED)

- Robots controlled by a mobile app (via Bluetooth).
- **Activity:** Build a Bluetooth-controlled robotic car.

### MONTH 9: AI EXPOSURE (TEACHER DEMO)

- Robots that recognize hand gestures or faces.
- **Activity (Demo):** Show how camera detects a hand sign robot responds (e.g., wave = move forward).

### MONTH 10: SHOWCASE PROJECT (TEAM WORK)

- Students combine sensors, motors, LEDs, and coding.
- **Project Idea: Smart School Gate** →
  - Car enters → gate opens.
  - Obstacle → robot stops.
  - Bell rings at entry.

## CLASS 5 – AI & ROBOTICS CURRICULUM

### MONTH 1: RECAP & GETTING STARTED WITH IOT

- Quick recap of Class 4 (traffic lights, Bluetooth car).
- Introduction to the idea of “smart devices” (things that connect to the internet).
- **Activity:** Build a simple “light ON/OFF” circuit using coding.

### MONTH 2: SMART LIGHTING & HOME AUTOMATION

- Learning how automation works in homes.
- **Activity:** Build a lamp that turns ON with a button, and OFF with another (like smart switches).

### MONTH 3: WEATHER AROUND US

- Introduction to environmental sensors.
- **Activity:** Build a mini weather station (temperature + humidity sensor → values displayed on screen).

### MONTH 4: IOT BASICS (CLOUD DEMONSTRATION)

- Teacher explains how devices send data to cloud dashboards.
- **Activity:** Record classroom temperature every hour and display on a graph (teacher sets up dashboard).

### MONTH 5: SAFETY DEVICES

- Robots can protect us.
- **Activity:** Build a fire alarm system (flame sensor + buzzer).

### MONTH 6: SMART SECURITY

- Introduction to motion detectors.
- **Activity:** Build a motion-detection alarm (robot rings buzzer when someone enters a room).

### MONTH 7: REMOTE CONTROL WITH MOBILE (IOT SIMPLIFIED)

- Understanding phone-controlled robots.
- **Activity:** Build a WiFi-controlled LED (turn light ON/OFF via mobile app).

### MONTH 8: INTRODUCTION TO AI (FUN EXPOSURE)

- Teacher explains: “AI can see and recognize things.”
- **Activity (Demo):** Show how a camera detects faces and counts them.
- **Students test:** class claps when faces are detected → buzzer rings.

### MONTH 9: IOT + AI COMBINED (GUIDED DEMO)

- Teacher explains how AI + IoT can work together.
- **Activity:** Smart Attendance Demo (camera detects faces → marks present on screen).

### Month 10: Showcase Project (Team Work)

- Students build a **Smart Classroom Project:**
  - Lights ON when dark.
  - Fan ON when hot.
  - Alarm if fire is detected.
  - (Teacher adds optional AI demo: camera detects students entering).

## CLASS 6 – AI & ROBOTICS CURRICULUM

### MONTH 1: RECAP & SMART DEVICES REFRESHER

- Recap of Class 5 (smart lights, weather station, alarms).
- **Activity:** Build a mini project → “Smart Fan” (fan runs if room is hot).

### MONTH 2: ADVANCED SENSORS IN ACTION

- Introduction to more sensors (gas, soil moisture, ultrasonic).
- **Activity:** Build a Smart Parking Sensor (ultrasonic detects car, buzzer + light alert).

### MONTH 3: IOT DASHBOARD BASICS

- Teach kids that data can be seen in a “dashboard.”
- **Activity:** Collect classroom temperature & send to a web/mobile app (teacher sets up ThingsBoard or Blynk).

### MONTH 4: GESTURE-CONTROLLED ROBOTICS

- Robots that move with gestures.
- **Activity:** Hand Gesture Car → wave hand to move robot forward/backward.

### MONTH 5: AI BASICS (TEACHABLE MACHINE)

- Introduce AI as “training the computer.”
- **Activity:** Train Teachable Machine to recognize 2 objects (like a bottle vs. pen).
- Robot reacts → bottle = LED ON, pen = buzzer.

### MONTH 6: IOT + AI PROJECT (APPLIED)

- Combine IoT with AI in a simple way.
- **Activity:** Build Smart Farming System → soil sensor + IoT cloud + AI prediction (“Water required or not”).

### MONTH 7: FACE RECOGNITION BASICS (HANDS-ON)

- Students experience AI vision more actively.
- **Activity:** Face detection with ESP32-CAM or Raspberry Pi → robot says “Hello!” when it sees a face.

### MONTH 8: AI + SECURITY SYSTEMS

- AI applied to safety.
- **Activity:** Face-recognition door lock (teacher guides coding).

### MONTH 9: CREATIVE ROBOTICS PROJECT

- Students invent their own robotics projects in teams.
- **Examples:**
  - Smart Dustbin (opens when hand shown).
  - Smart Traffic Light (changes with object detection).

### MONTH 10: SHOWCASE PROJECT (TEAM COMPETITION)

- Students present projects in a mini exhibition/competition.
- **Examples:**
  - Smart City Model (traffic, streetlights, safety alarms).
  - AI Attendance System.
  - Gesture-controlled car.

## CLASS 7 – AI & ROBOTICS CURRICULUM

### MONTH 1: TRANSITION TO PYTHON

- Why Python is used in AI.
- Learning basics: print, variables, loops.
- **Activity:** Write a Python program that prints shapes (like stars triangle).

### MONTH 2: PYTHON WITH ROBOTICS

- Connect Arduino/Raspberry Pi with Python.
- **Activity:** Blink an LED or control a motor using Python code.

### MONTH 3: AI VISION BASICS (FACE DETECTION)

- Introduction to Computer Vision (using OpenCV or ESP32-CAM).
- **Activity:** Detect a face with camera → LED turns ON when face is seen.

### MONTH 4: AI OBJECT RECOGNITION

- Use a pre-trained ML model to recognize objects/colors.
- **Activity:** Build a Color Sorting Robot → detect red/blue objects and move them.

### MONTH 5: SPEECH RECOGNITION BASICS

- Teach robots to “listen” to voice commands.
- **Activity:** Control robot car using voice (“Go forward”, “Stop”).

### MONTH 6: IOT DASHBOARD WITH PYTHON

- Collect data from sensors & send to cloud.
- **Activity:** Build a Smart Weather Dashboard (temperature, humidity live graph).

### MONTH 7: GESTURE RECOGNITION PROJECTS

- AI can also understand body/hand movements.
- **Activity:** Hand gesture control → show palm = robot stops, fist = robot moves.

### MONTH 8: AI FOR FUN PROJECTS

- Train a simple model with Google Teachable Machine.
- **Activity:** Train computer to recognize two poses (like “jump” vs “sit”) → robot responds differently.

### MONTH 9: MINI PROJECT (TEAM WORK)

- Students form groups and pick a problem to solve.
- **Examples:**
  - Smart Attendance System (face recognition).
  - Voice-controlled Home Automation.
  - Smart Parking System with sensors + AI camera.

### MONTH 10: SHOWCASE & COMPETITION

- Exhibition or intra-school competition.
- Each team presents their AI + Robotics project.
- Judges (teachers/parents) select winners.

## CLASS 8 – AI & ROBOTICS CURRICULUM

### MONTH 1: PYTHON REFRESHER & DATA HANDLING

- Review loops, conditions, functions.
- Learn about data (CSV/JSON).
- **Activity:** Python program to record temperature data and save it in a CSV file.

### MONTH 2: ADVANCED SENSORS & ROBOTICS

- Using multiple sensors together (gas, soil moisture, GPS).
- **Activity:** Build a Smart Farming System (soil sensor → pump ON, data logged).

### MONTH 3: COMPUTER VISION – OBJECT TRACKING

- Introduction to OpenCV (image & video).
- **Activity:** Build a Color Tracking Robot (follows a red ball).

### MONTH 4: FACE & EMOTION RECOGNITION

- How AI detects and recognizes faces.
- **Activity:** Create a program that detects faces and displays “Happy/Neutral” using a pre-trained model.

### MONTH 5: IOT CLOUD INTEGRATION (ADVANCED)

- Sending data to a dashboard (ThingsBoard, Blynk, AWS IoT).
- **Activity:** Classroom Weather Station → live temperature, humidity, air quality.

### MONTH 6: VOICE & SPEECH PROJECTS

- Use Python speech libraries.
- **Activity:** Build a Voice Assistant (responds to “What’s the time?” or “Open YouTube”).

### MONTH 7: GESTURE RECOGNITION AI

- Using AI models to recognize hand gestures.
- **Activity:** Hand Gesture Controlled Car → palm = stop, thumbs up = go, two fingers = turn.

### MONTH 8: AI IN SECURITY SYSTEMS

- Applying AI for safety.
- **Activity:** Smart Security Camera → detects a person → sends alert via IoT cloud.

### MONTH 9: MINI TEAM PROJECT

- Students form groups and build their own solutions.
- **Examples:**
  - Smart Dustbin (opens automatically).
  - AI Door Lock (face recognition).
  - IoT-based Fire Alarm (data sent to phone).

### MONTH 10: SHOWCASE & COMPETITION

- Intra-school AI Fair.
- Teams present projects to parents & teachers.
- Best projects can be prepared for ATL Marathon, RoboCup, Technoxian competitions.

## CLASS 9 – AI & ROBOTICS CURRICULUM

### MONTH 1: MACHINE LEARNING BASICS

- What is ML? Difference between AI, ML & Robotics.
- Concepts: training vs testing data.
- **Activity:** Use Teachable Machine to train an image classifier (e.g., “Pen vs Bottle”).

### MONTH 2: CUSTOM AI PROJECTS (IMAGE RECOGNITION)

- Running ML models on ESP32-CAM / Raspberry Pi.
- **Activity:** AI Camera that detects objects and switches LED (e.g., apple vs banana).

### MONTH 3: FACE RECOGNITION SYSTEMS

- How face recognition works.
- **Activity:** Build a Face Unlock System (camera + servo door lock).

### MONTH 4: SPEECH-TO-TEXT AI

- Basics of Natural Language Processing (NLP).
- **Activity:** Voice-to-text Python program (students dictate a note, AI types it).

### MONTH 5: VOICE COMMAND ROBOTICS

- Controlling robots with NLP-powered commands.
- **Activity:** Build a Voice Controlled Car (“Go forward”, “Turn left”).

### MONTH 6: IOT + PREDICTIVE AI

- Using AI to make predictions from sensor data.
- **Activity:** Weather Prediction System → train AI to predict “Rainy/Not Rainy” using temp & humidity.

### MONTH 7: ROBOTICS WITH AI NAVIGATION

- Using AI + sensors for autonomous movement.
- **Activity:** Build an Object Following Robot with AI vision.

### MONTH 8: AI FOR SOCIAL GOOD

- Discuss real-world problems AI can solve.
- **Activity:** Projects like AI Road Safety System (detect helmets), AI Smart Farming (detect dry soil).

### MONTH 9: TEAM MINI PROJECTS

- Students form groups, apply what they learned.
- **Examples:**
  - AI Attendance System (face recognition).
  - Smart Healthcare Monitor (heartbeat sensor + AI alerts).
  - Smart City Traffic AI (object detection).

### MONTH 10: SHOWCASE & COMPETITION PREP

- Final presentations in a school AI showcase.
- Encourage participation in ATL Marathon, RoboCup, Hackathons.
- Teachers guide students to document projects like case studies.

## CLASS 10 – AI & ROBOTICS CURRICULUM

### MONTH 1: AI FOR IMAGE CLASSIFICATION

- Deep dive into image classification with TensorFlow Lite / Edge Impulse.
- **Activity:** Train a Plant Disease Detector (healthy vs infected leaves).

### MONTH 2: CHATBOTS & NLP BASICS

- Intro to Natural Language Processing (NLP).
- **Activity:** Build a Chatbot in Python that answers simple school-related questions (like timetable or greetings).

### MONTH 3: AI + ROBOTICS (DRONE BASICS)

- Learn how drones can be programmed.
- **Activity:** Program a Tello EDU drone to take off, land, and move in patterns.

### MONTH 4: AI-POWERED DRONES

- Adding vision AI to drones.
- **Activity:** Drone follows a colored object / recognizes a sign (STOP/GO).

### MONTH 5: IOT IN HEALTHCARE

- AI for health monitoring.
- **Activity:** Build a Smart Health Monitor → heart rate + SpO<sub>2</sub> sensor → AI predicts “Safe/Alert”.

### MONTH 6: AI FOR TRAFFIC & SAFETY

- AI applied to smart cities.
- **Activity:** Build a Smart Traffic Light → detects number of cars (camera vision) → adjusts green light timing.

### MONTH 7: VOICE AI PROJECTS

- More advanced speech/NLP applications.
- **Activity:** Build a Voice-Controlled Virtual Assistant that opens apps, plays music, or fetches info.

### MONTH 8: DATA-DRIVEN AI PROJECTS

- Students collect their own dataset, train, and test.
- **Activity:** Predict exam performance (using study hours dataset) OR rainfall prediction from weather data.

### MONTH 9: TEAM CAPSTONE PROJECT

- Students form groups and build real-world AI + Robotics solutions.
- **Example Projects:**
  - AI Surveillance Drone.
  - Smart Farming Robot (soil + AI vision).
  - Face Recognition Smart Classroom (auto attendance + access control).

### MONTH 10: SHOWCASE & COMPETITION PREP

- Organize AI & Robotics Expo at school.
- Prepare projects for ICSE AI Curriculum, ATL Marathon, Technoxian, RoboCup.
- Students present projects as mini start-up pitches.

## CLASS 11 – AI & ROBOTICS CURRICULUM

### MONTH 1: ADVANCED PYTHON & DATA HANDLING

- Learn Python for AI: NumPy, Pandas, Matplotlib.
- **Activity:** Use Raspberry Pi to collect classroom temperature data, analyze trends, and plot graphs.

### MONTH 2: AI FUNDAMENTALS & NEURAL NETWORKS

- Basics of Machine Learning & Neural Networks.
- **Activity:** Train a simple model (e.g., hand-written digit recognition — MNIST) on laptop/cloud.
- Deploy lightweight model on Raspberry Pi with TensorFlow Lite.

### MONTH 3: COMPUTER VISION WITH PI CAMERA

- Use Raspberry Pi Camera + OpenCV.
- **Activity:**
  - Detect faces & smiles.
  - Count classroom attendance with AI.

### MONTH 4: NATURAL LANGUAGE PROCESSING (NLP)

- Use Python NLP libraries (NLTK, spaCy).
- **Activity:** Build a voice assistant on Raspberry Pi → takes voice commands & responds (e.g., “What’s the time?”, “Play music”).

### MONTH 5: IOT + AI INTEGRATION

- Connect sensors (DHT11, PIR, Soil sensor) with Raspberry Pi.
- **Activity:** Smart Farming → AI predicts soil moisture needs + auto water pump.

### MONTH 6: AI FOR SMART CITIES

- Real-world applications of AI.
- **Activity:** Smart Traffic Light on Raspberry Pi → detects vehicles via Pi camera → changes light timing automatically.

### MONTH 7: ROBOTICS WITH RASPBERRY PI

- Raspberry Pi + Motor driver shield for robotics.
- **Activity:** Build a Line-Following Robot with AI vision (follows a path using Pi camera).

### MONTH 8: AI IN HEALTHCARE

- Raspberry Pi for medical applications.
- **Activity:** AI-based Heart Rate Monitor (sensor + Pi) → classifies Safe/Alert status.

### MONTH 9: CAPSTONE PROJECT DEVELOPMENT

- Students form teams, pick real-world problem.
- **Example Projects:**
  - Face Recognition Door Lock (Pi + Camera).
  - AI Energy Saver (lights on/off by people count).
  - AI Waste Segregator (Pi camera detects plastic vs paper).

### MONTH 10: SHOWCASE & COMPETITIONS

- Students refine & present projects.
- Projects aligned with ICSE AI curriculum, ATL Marathon, Technoxian, RoboCup, Intel AI Global Impact Festival.
- Each team prepares presentation + working demo + short pitch video.

## CLASS 12 – AI & ROBOTICS CURRICULUM

### MONTH 1: DEEP LEARNING FOUNDATIONS

- Intro to Deep Learning (CNNs, RNNs).
- Using TensorFlow Lite & Keras on Raspberry Pi.
- **Activity:** Train a custom image classifier (e.g., mask vs no-mask detection).

### MONTH 2: ADVANCED COMPUTER VISION

- Object detection with YOLO / MobileNet on Pi.
- **Activity:** AI-powered CCTV Surveillance System → detects strangers, intruders, or movement after hours.

### MONTH 3: AUTONOMOUS ROBOTICS (SELF-DRIVING CAR BASICS)

- Raspberry Pi + camera + ultrasonic sensors.
- **Activity:** Build a Mini Self-Driving Car → follows lanes, stops at traffic signs, avoids obstacles.

### MONTH 4: DRONES & AERIAL ROBOTICS

- Theory of drone automation + Pi-based control integration.
- **Activity:** Program a Drone to capture aerial images & run AI vision (object detection).

### MONTH 5: ADVANCED NLP + CHATBOTS

- Deploy advanced NLP models (transformers like DistilBERT on Pi or cloud).
- **Activity:** Build a School Helpdesk Chatbot (answers queries about timetable, syllabus, notices).

### MONTH 6: AI + IOT (INDUSTRY APPLICATIONS)

- AI integration with IoT sensors & cloud (AWS/Azure/Google Cloud).
- **Activity:** Smart Industry Project → Predictive Maintenance (fan motor vibration + AI alert system).

### MONTH 7: AI IN HEALTHCARE & ENVIRONMENT

- Real-world social impact projects.
- **Activity:** AI-based Disease Classifier → detect malaria/covid/x-ray classification (dataset + Pi).
- **Activity:** AI Waste Segregator → Pi camera detects plastic, paper, metal.

### MONTH 8: TEAM CAPSTONE PROJECT DEVELOPMENT

- Students choose their major project.

### MONTH 9: STARTUP & INNOVATION TRAINING

- Students learn how to pitch ideas, build business models.
- Create pitch decks, demo videos, GitHub repos.
- **Activity:** Prepare entries for competitions.

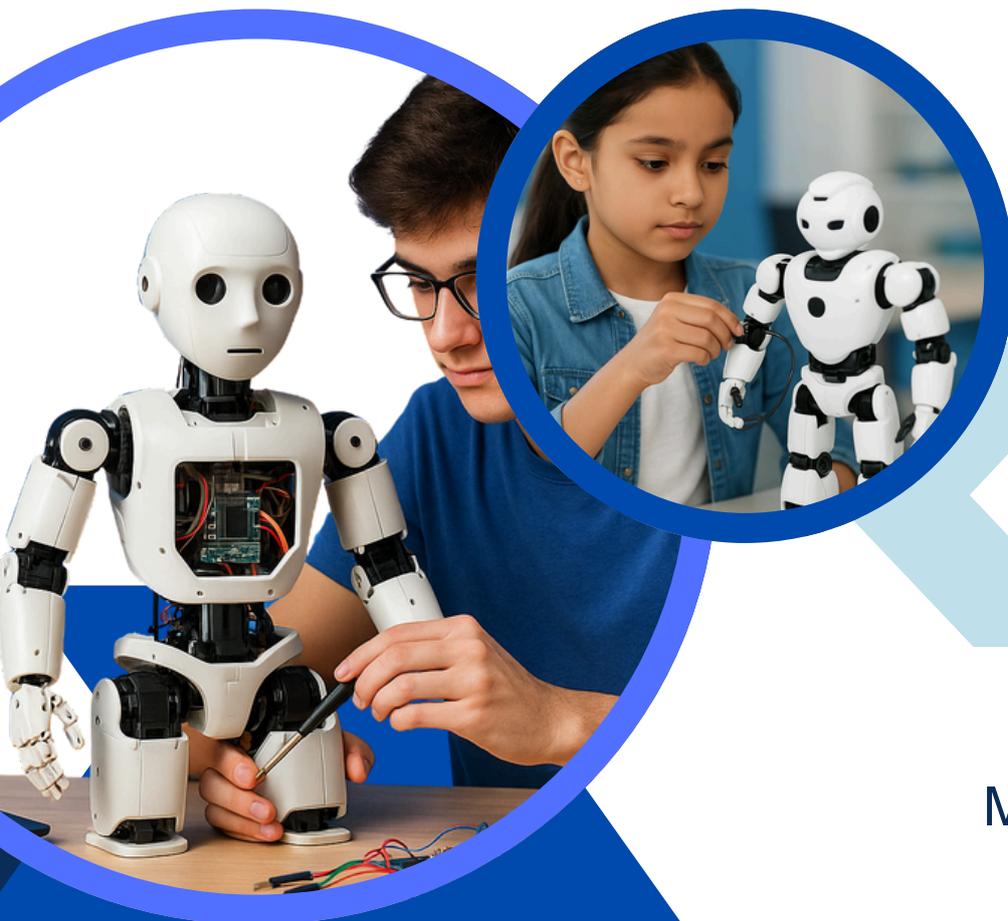
### MONTH 10: SHOWCASE & GRADUATION EXPO

- AI & Robotics Mega Expo at school.
- Invite parents, industry experts, and universities.
- Students present projects as mini-startups.
- Best projects recommended for incubation support, hackathons, and college portfolios.

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# Thank You

## For Your Attention



More Information

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