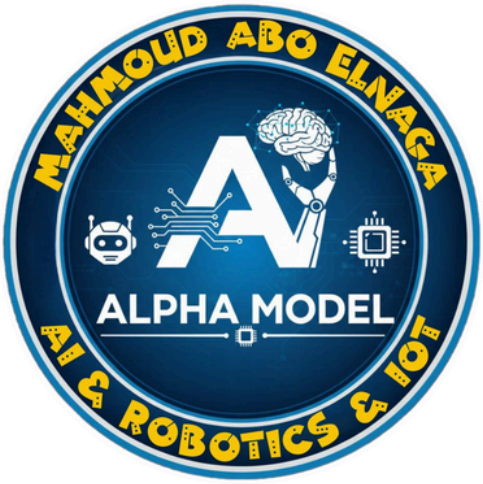
Roadmap

A simple path from basics in math and programming to AI, Computer Vision, and Robotics — ending with real projects like drones and smart cars.



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Week	Topics
Week 1 – Programming Basics for Robotics	- Introduction to Programming - What is Coding? - Programming Languages (High, Low, Machine) - IDE & Syntax - Editor vs Compiler vs Interpreter - Data Types & Conditional Statements - How to choose a laptop for programming
Week 2 – Arduino Basics & First Project	- Introduction to Arduino - Arduino IDE Overview - Code Structure (setup & loop) - Digital & Analog Pins - First Project: LED Blinking
Week 3 – Sensors & Inputs with Arduino	- What are Sensors? - Types of Sensors (Ultrasonic, IR, LDR, etc.) - Reading sensor values - Serial Monitor & Debugging - Mini Project: Distance Measurement
Week 4 – Linear Algebra for Robotics	Vectors & Matrices - Matrix Operations - Applications in Robot Kinematics - Python with NumPy Examples
Week 5 – Actuators & Motion	- What are Actuators? - DC Motors, Servos, Relays - L298N Motor Driver - PWM & Speed Control - Mini Project: Motor Test

Week	Topics
Week 6 – Mid Evaluation & Quiz	- Review of Weeks 1–4 - Short Quiz - Small Team Challenge
Week 7 – Obstacle Avoidance Basics	- Obstacle Detection Concept - Ultrasonic Sensor Logic - Decision Making with if-else - Mini Project: Obstacle Detectio
Week 8 – Motors + Ultrasonic Integration	- Combining Sensors & Motors - Distance Calibration - Mini Project: Stop Before Collision
Week 9 – Full Obstacle Avoiding Robot	- Full Robot Assembly - Integration & Testing - Troubleshooting & Optimization
Week 10 – Advanced Project: Line Followe	- Concept of Line Following - IR Sensors for Path Detection - Logic Implementation - Build & Test Line Follower
Week 11 – Final Project & Closin	- Final Project Presentation - Real-world Robotics Applications - Feedback
Week 12 – Graduation Project	- Final Practical Project - Teamwork & Presentation - Evaluation & Closing Ceremony