Quotation for Robotics Workshop & Robot Dog Kit

Submitted by: Safear Defense Pvt. Ltd. (Safear India)
To: BMS College of Engineering
Subject: Quotation for “Building & Programming a Robot Dog” Workshop + Robotic Dog Kit
Duration: 3 Days
Dates: Oct 27- 28th, 31st Oct
Timing: 2:30 PM – 5:00 PM

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1. Workshop Overview

Safear India proposes a **hands-on robotics workshop** titled **“Building & Programming a Robot Dog”**, designed to provide engineering students with **industry-grade exposure** in robotics design, sensor systems, and AI-based motion control.

Through this session, students will **assemble, program, and simulate** a functional quadruped robot using Safear’s **MakerX Robotics Kit** powered by the **PilotX microcontroller** — both developed under the **Startup India and IIT Mandi NIDHI Prayas program**.

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2. Technical Learning Outcomes

Mechanical & Design Concepts

- Quadruped structure: **stability, and load distribution**.
- Understanding **servo torque, joint motion**, and balance mechanics.
- Structural assembly of robot legs and body frame using MakerX parts.

Embedded Systems & Sensor Integration

- Introduction to **PilotX Microcontroller (ARM Cortex-based)**.
- Sensor interfacing using **PWM, I²C, and UART** protocols.
  Hands-on integration of:
  - **IMU Sensor (Gyroscope + Accelerometer)** – balance and motion feedback.
  - **Ultrasonic Sensor** – obstacle detection.
  - **IR Sensors** – line and edge detection.

Programming & Motion Control

- Programming in **MicroPython** for real hardware.
- Implementing **algorithms**, walking and turning logic.
- Introduction to **inverse kinematics** for joint control.
- Debugging and performance tuning.

Simulation & AI Fundamentals

- Using **PlannerX App** for simulation, telemetry, and visualization.
- Sensor feedback testing and real-time control.
- Introduction to **AI-assisted movement planning** concepts.

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3. Day-Wise Agenda

Day	Topics Covered	Timing
Day 1	Mechanical Design, Assembly & Servo Calibration	2:30 PM – 5:00 PM
Day 2	Programming, Sensor Integration & Motion Algorithms	2:30 PM – 5:00 PM
Day 3	Evaluation, Demonstration & Felicitation	2:30 PM – 4:30 PM

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4. Deliverables

- 3 Days of practical robotics training using **MakerX + PilotX** kits.
- Access to **PlannerX App** for simulation and control.
- **Certificates of Completion** for all participants.
- Direct entry for top students into the **Safear Innovation Network Internship Program**.
- **1 Robotic Dog Kit** to be retained by the college for demonstrations and future projects.

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5. Financial Quotation

Particulars	Unit Cost (INR)	Quantity	Total (INR)
3-Day Robot Dog Workshop (per student)	₹599	30 Students	₹17,970

Robot Dog Kit (MakerX + PilotX) *(Special Institutional Offer)*	₹4,999	1 Unit	₹4,999

Total Amount (Exclusive of GST) **₹22,969**

Retail Value of Kit: ₹9,999 (offered at institutional rate ₹4,999).
Effective Value Delivered: Over **₹1,00,000** worth of learning, tools, and project exposure through this single engagement.

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6. Value Proposition

- 100% hands-on **practical robotics experience**.
- Exposure to **real-world control systems** and AI-ready robotics.
- Students develop skills across **mechanical design, coding, and electronics**.
- Institutional ownership of **1 advanced robotic dog kit** for R&D and exhibitions.
- Backed by **IIT Mandi and Startup India**, ensuring high educational credibility.

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7. About Safear India

Safear Defense Pvt. Ltd. (Safear India) is a **deep-tech robotics and automation startup**, officially recognized under **Startup India** and supported by **IIT Mandi's NIDHI Prayas program**.
Safear designs and manufactures **PilotX microcontrollers** and **MakerX robotics kits**—empowering students and professionals to learn, innovate, and build industrial-grade robotics projects in India.

Authorized Signatory
Debasis Doki
Co-Founder, Safear Defense Pvt. Ltd.