Hands On Introduction to Robotics 2.0

Draft Plan

Topics to be Covered

1. **Sensors:** IR, Gas, LDR, PIR, Water Level

2. **Devices:** Relays, Switches, Buzzer(Active & Passive), RGB Leds, Resistor, Potentiometer, Capacitor, Diode

3. **Integrated Circuit (IC) Chips :**
    - **74HC00, 74HC02, 74HC04, 74HC08, 74HC32,74LS86**
    - **74LS47 - For Driving a 7 Segment Anode Display**
    - **NE555 - Timer IC**
4. **BJT (Bipolar Junction Transistor) for making logic Gates**

5. **Soldering Techniques**

6. **Multimeter Usage:** Introduction, measurement techniques, and component value identification (capacitors, resistors & others)

7. **Prototyping Tools:** Breadboard & Veroboard

Schedule

- **Day 1: Sensors & Actuators**
    - Introduction to various sensors (working principle, applications, and demonstrations).
    - Introduction to various Devices (working principle, applications, and demonstrations).
- **Day 2: Logic Gates & BJT**
    - Working principles of basic logic gates (AND, OR, NOT).
    - Introduction to BJT: structure, operation modes, and applications.
- **Day 3: Practical Tools & Hands-on Session**
    - Multimeter: introduction, correct usage, and measurement practices.
    - Identification of resistor and capacitor values.
    - Soldering: techniques, safety, and practice session.
    - Introduction to breadboard and veroboard for circuit prototyping and implementation.