Weekly Progress Report
Week 11

Period: 08–12 December 2024

Background

This week, the team focused on advancing the humanoid robot project by initiating key design and functionality enhancements. The groundwork from previous weeks has enabled us to dive deeper into practical implementations, including mechanical upgrades, electronic configurations, and improved documentation systems.

This Week's Progress

- **3D Design Initiation:**
  - Began the 3D modeling of the humanoid robot, informed by detailed material planning.
  - Ensured material choices align with durability and functionality requirements.
- **PCB Design:**
  - Launched the schematic and PCB design process to streamline the integration of electronic components.
- **New Feature - Cleaning Functionality:**
  - Introduced a cleaning mechanism as a new feature to enhance the robot's functionality.
  - Integrated the concept into current designs and began researching efficient mechanical adaptations for this functionality.
- **Repository Creation:**
  - Established a dedicated GitHub repository to organize and store:
    - Project codes.
    - 3D designs.
    - Documentation of technical progress for streamlined collaboration and tracking.
- **Temperature Measurement Development:**
  - Engaged in discussions and preliminary research to implement temperature sensing capabilities in the robot.
- **ESP32-CAM and Arduino Configuration:**
  - Developed components and shields for Arduino and ESP32-CAM integration.
  - Configured ESP32-CAM for real-time streaming, optimized to minimize lag and errors.

Challenges Encountered

- **Mechanical Design Adaptations:**
  - Challenge: Incorporating the cleaning mechanism without affecting other functionalities.
  - Solution: Researched potential designs and shortlisted feasible options for testing.
- **Streaming Lag with ESP32-CAM:**
  - Challenge: Reducing latency for smoother real-time video.
  - Solution: Optimized firmware and improved code to enhance performance.
- **Temperature Measurement:**
  - Challenge: Identifying precise and compatible sensors.
  - Solution: Shortlisted viable options, awaiting testing and integration.