

Requirements

US-D1: As an agricultural scientist, I want to display the camera's thermal imaging in real-time on the Raspberry Pi operating system, enabling future capabilities for remotely monitoring FarmBot's thermal imaging.

US-D2: As an agricultural scientist, I want to understand the FLIR camera's data interface type, whether Ethernet or USB, to develop a communication strategy that is compatible with FarmBot's mainboard.

US-D3: As an agricultural scientist, I want to know the sensor's dimensions and mounting details to design a stable and easily installable solution for FarmBot's operational environment.

US-D4: As an agricultural scientist, I want to adjust the hardware integration for adaptability, ensuring the FLIR camera supports plug-and-play functionality to reduce technical barriers and improve user experience.

US-D5: As an agricultural scientist, I want the camera's power cable to be compatible with the movement range of FarmBot's robotic arm for efficient thermal imaging capture.

US-D6: As an agricultural scientist, I want to specify the new sensor's power specifications, including the required voltage and current, so it can be safely powered by FarmBot's electrical system without equipment damage risk due to power incompatibility.

US-D7: As an agricultural scientist, I need to design and implement an efficient server architecture that can handle data requests and responses for FarmBot's thermal imaging data efficiently.

US-D8: As an agricultural scientist, I need to design a database that can store and manage thermal imaging data, ensuring efficient retrieval and secure storage of the data.

US-D9: As an agricultural scientist, I need to integrate the thermal imaging functionality into the existing FarmBot web application, such as adding a new page to display thermal imaging, so that we can offer thermal imaging monitoring features to users seamlessly.

US-D10: As an agricultural scientist, I need to integrate AI-driven environmental parameter analysis with the FarmBot system, so that camera settings can be automatically adjusted based on environmental feedback, ensuring optimal imaging under varying conditions.

US-U1: As a farmer, I want the FarmBot web application interface to be simple and easy to use so that I can view thermal imaging in real-time through a user-friendly UI, thereby simplifying the process of remotely monitoring crop health.

US-U2: As a farmer, I want the system to automatically recognize patterns and anomalies in thermal imaging using AI, so that I can be alerted to changes in crop health status without manually reviewing each image.

US-U3: As a farmer, I want to be able to view and download historical thermal imaging data on the FarmBot web application, so that I can conduct further analysis and keep records.