

Group L2-G9

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Project title: Print Guard: Real-time 3D Printer Monitoring and Management System

The Problem

Real time feedback is essential for the efficient use of resources. Not being able to monitor the 3D printer while away from it, can lead to complications that waste resources. There are many resources which are at stake such as the product itself, time, and money. Allowing the user to have a constant feedback loop will prevent unnecessary energy consumption. The user will not be able to control the printer if there are complications unless they are able to interact with the printer. We can also extend the problem where we are able to handle the queue of jobs.

Intended solution

Using sensors to monitor the 3D printer enables the user to view the printer remotely. The data from these sensors can be used to determine faults or warnings with the printer. The user can view these warnings and determine if the printer should stop to save resources. These sensors can track variables like temperature, motion, and filament usage, providing users with crucial insights into the printing process. With wireless connectivity, users can access data from anywhere, allowing timely interventions and adjustments. By implementing monitoring interfaces and alert mechanisms, users can proactively manage printing operations, minimize material wastage, and enhance overall productivity.

Milestones

Milestone #	Milestone Goals
1	Read sensor data from temperature and humidity sensors, store in database
2	Control a fan using PWM from temperature sensor, store speed in database
3	Use RPi camera to capture images and video, store in database
4	Connect 3D printer to wifi and use API to access data
5	Send notifications about warnings and print finishes
6	Create GUI that allows us to view and control the printer
7 (stretch)	Connect camera view to server and use AI to detect print failures

