Automated Whiteboard Capture and Upload System

Team Members: Nikita Veytsman, Kyle Mares, Evan Noyes

Milestones List

1. Hardware Research and Selection	Evaluate Raspberry Pi models and camera modules for optimal resolution, frame rate, and processing performance suitable for classroom use.	Week 3
2. Server and Software Research	Investigate web hosting platforms, domain options, and server software compatible with live image streaming.	Week 4
3. Raspberry Pi Assembly	Integrate Pi with camera module and verify proper image capture; establish power and connectivity setup.	Week 5
4. System Architecture Development	Design data flow and communication pathway from Raspberry Pi → Processing → Web Server → Student Interface.	Week 6
5. Screenshot & Enhancement Algorithm	Develop Python/OpenCV algorithm for periodic image capture, brightness enhancement, and edge sharpening.	Week 7
6. Webpage and UI Design	Create responsive website layout for real-time whiteboard viewing and note storage accessible on any device.	Week 8
7. User Authentication & Control Panel	Implement secure login for students and faculty plus professor control features (camera timing, upload toggles).	Week 9
8. 3D Enclosure Design	Model and 3D-print an enclosure to hold Raspberry Pi and allow angle adjustment; ensure classroom durability.	Week 10
9. Data Storage Integration	Link web server database for storing user data and captured images for long-term access.	Week 11
10. Full System Integration and Testing	Combine hardware, software, and web modules; perform debugging and ensure reliability of automatic upload cycle.	Week 12
11. Final Report and Poster Presentation	Compile all results, final documentation, and presentation materials for end-of-term expo.	Week 13

Table 1 – Project Timeline

Task	Start Date	End Date	Milestone
Research and select Raspberry Pi model and camera	Week 1	Week 3	1
Research server hosting methods and software	Week 2	Week 4	2
Assemble Raspberry Pi with camera	Week 3	Week 5	3

Create system architecture	Week 5	Week 6	4
Write screenshot & enhancement algorithm	Week 6	Week 7	5
Implement image processing & brightness correction	Week 6	Week 8	5
Design webpage for displaying lecture images	Week 7	Week 8	6
Develop user authentication system	Week 8	Week 9	7
Create webserver and purchase domain	Week 8	Week 9	7
Design/print Raspberry Pi enclosure	Week 9	Week 10	8
Implement data storage	Week 9	Week 11	9
Create teacher control panel	Week 9	Week 10	7
Build user interfaces	Week 9	Week 11	9
Perform integration & testing	Week 11	Week 12	10
Submit final report & presentation	Week 12	Week 13	11

Table 2 – Effort Matrix (Adjusted to Assigned Responsibilities)

Task	Nikita Veytsman	Kyle Mares	Evan Noyes	Total Effort (%)
Research and select Raspberry Pi model and camera	20%	60%	20%	100%
Research server hosting methods and software	20%	20%	60%	100%
Assemble Raspberry Pi with camera	20%	60%	20%	100%
Create system architecture	20%	60%	20%	100%
Write screenshot & enhancement algorithm	20%	20%	60%	100%
Implement image processing & correction	20%	60%	20%	100%
Design webpage for displaying lecture images	60%	20%	20%	100%
Develop user authentication system	20%	20%	60%	100%
Create webserver and purchase domain	60%	20%	20%	100%
Design/print Raspberry Pi enclosure	20%	20%	60%	100%
Implement data storage	60%	20%	20%	100%
Create teacher control panel	20%	20%	60%	100%
Build user interfaces	60%	20%	20%	100%

Perform integration & testing	60%	20%	20%	100%
Submit final report & presentation	20%	60%	20%	100%