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**Preface**

This document acts a user manual or cheat note to some college managerial operations automation through an integrated computer system. The system target to make these operations more efficiently with more facilities and capabilities in order to reduce the time, effort, and other resources as well as treating conflictions in time and attendance management between courses instructors and students.

The main reason of this system is to isolate and automate managerial and operations processes by making these processes automated and isolated to leave most of available space to educational activities, to get the optimal beneficial use of available resources to instructors as well as students.

In order to get the system in the most sophisticated form, this required to go several versions of software program development and documentation to user and system requirements to achieve customer satisfaction within available resources and budget.

The following table demonstrate a brief comparison between different system visions as follows:

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| 1.0 | Only a GUI interface with a temporary data records instead of design and implementation of actual database through database management system |
| 2.0 | Integrate an application GUI with an actual Database design through SQL lite engine by sqlalchemy |
| 3.0 | All previous versions were based on uploading students images to the website in this version we add a feature that the student can take a live image in the real time |
| 4.0 | To improve image matching algorithms acceleration, we add video streaming capabilities to ensure data integrity |
| 5.0 | Maintain system security issues and resolve the remaining bugs and problems |

**Introduction**

The proposed system will be capable to perform the following operations:

1. Manage college student attendance in an automated manner
2. Organize student’s attendance in a hierarchal form to provide efficient representation and ease of use within a service orientation towards the instructors to make them do the minimal effort in order to save their time

It consists of three modules: microprocessor-based system, web API, and user GUI web interface to interact with the system through web GUI and microprocessor-system peripherals to achieve system usability and user-friendly experience.

We used the following tools and frameworks:

1. Flask
2. Sqlalchemy
3. OpenCV
4. numPy
5. Face detection
6. Face Recognition

To provide a sufficient tool kit to the project, to ensure efficient performance and sophisticated results as well.