

Power Automation in a classroom

Software Project Management Plan

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Group 2

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Chapter 1

Introduction

1.1 Project Overview

In today's world, electricity plays a vital role and hence there is a necessity to find a way to save electricity in various places where it is being used in abundance. People do not take this seriously and do not put in efforts in order to save electricity. Usage of electricity has been continually increasing and in most of the places it is being wasted and hence we look forward to propose a way in which electricity can be saved at places where it is being wasted. We are here considering an example of a classroom where electricity is essential. Due to the busy schedule in today's life, it is often observed that people forget to switch off the lights and fans in a room which leads to an increment in the electricity bill. Over a number of years, many advancements have been made in order to automate the working of electrical appliances in a building. We propose a system in order to automate the electric appliances of a classroom in order to save electricity as much as possible. We look forward to make use of a combination of motion detection algorithms and face detection algorithms in order to automate the supply of electricity, i.e. switch it off, in case no one is present in the room and switch it on in case of the presence of even one person in the room.

1.2 Project Deliverables

The deliverables will include tex, html, python, and text files for the purposes mentioned ahead.

1. A Software Requirements Specification Document describing the functional and global requirements of the system as well as representative models

(use case model, the object model, etc).

Delivery date: 31th October 2018.

2. A Software Project Management Plan defining the processes necessary for the development and delivery of the system.

Delivery date: 31th September 2018.

3. A System Design Document describing the design goals, hardware/software platforms, data management, software control implementation and boundary conditions.

Delivery date: 2nd November 2018.

4. A Software Test Description (STD) that describes the test preparations, test cases, and test procedures to be used to perform testing of the software system.

Delivery Date: 31th October.

5. A Test Document describing the unit and system tests performed on the system before delivery along with expected and actual results.

Delivery date: 1st March 2019.

6. Source code for all subsystems of the system in Python and PHP.

Delivery date: 13th April 2019.

7. The system documentation describing the principles of operation for the user.

Delivery date: 15th March 2019.

Chapter 2

Project Organization

2.1 Process Model

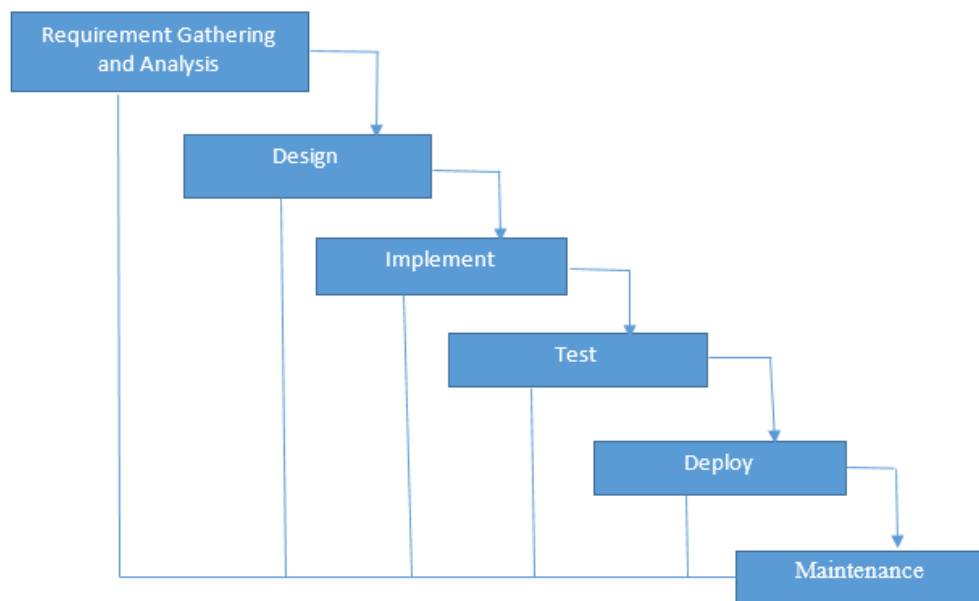


Figure 2.1: Waterfall Model

The Waterfall model is where the product is designed, implemented and tested serially.

This model is ideal for this project as:

- The requirements are fairly clear and the risks are quite low.

- The project development process can be divided into clearly independent tasks.
- Ample resources are available for support.

2.2 Roles and Responsibilities

1. Mr. Pranil Bhavsar Designer- understanding the requirements and designing a solution that will meet the requirements, creating models and diagrams.
2. Ms. Kavya Purushothaman - Developer 1 - write the code that performs the tasks and follow the agreed design and testing the modules.
3. Mr. Bhavya Shah - Developer 2 - write the code that performs the tasks and follow the agreed design and testing the modules.

2.3 Tools and Techniques

Requirement	Latex	Survey
Design	LucidChart	UML2.0
Development	Python Shell,C++ turbo	Python and C++
Hardware	Camera,Rpi3 and Rc	NA

Chapter 3

Project Management plan

3.1 Tasks

3.1.1 Task-1

3.1.1.1 Description:

SPMP-T1111 Get approval for project from panel members.

3.1.1.2 Deliverables and Milestones:

PowerPoint presentation explaining need and main features of the project.

3.1.1.3 Resources Needed:

Microsoft PowerPoint.

3.1.1.4 Dependencies and Constraints:

Approval seminar takes place according to the schedule and the presentation makes the important aspects of the project clear.

3.1.1.5 Risks and Contingencies:

The objectives of the project are not clear.

3.1.2 Task-2

3.1.2.1 Description:

SPMP-T2222 Prepare Software requirements specification (SRS) document.

3.1.2.2 Deliverables and Milestones:

Tex and pdf files.

3.1.2.3 Resources Needed:

LaTeX editor software.

3.1.2.4 Dependencies and Constraints:

The objectives and requirements have been properly understood by the team members.

3.1.2.5 Risks and Contingencies:

There is ambiguity in the requirements.

3.1.3 Task-3

3.1.3.1 Description:

SPMP-T3333 Prepare Software Project Management Plan (SPMP) document

3.1.3.2 Deliverables and Milestones:

Tex and pdf files.

3.1.3.3 Resources Needed:

Latex editor software.

3.1.3.4 Dependencies and Constraints:

The tasks, deliverables and timeline of the project is clear to the team members.

3.1.3.5 Risks and Contingencies:

There is ambiguity in the division of tasks.

3.1.4 Task-4

3.1.4.1 Description:

SPMP-T4444 Prepare Software Design Description (SDD) document.

3.1.4.2 Deliverables and Milestones:

Tex and pdf files.

3.1.4.3 Resources Needed:

Latex editor software.

3.1.4.4 Dependencies and Constraints:

The designer is able to make a clear judgment about the tools and software to be used, and the modules that the project will consist of.

3.1.4.5 Risks and Contingencies:

The designer unsure about the type of tools to be used, that would match the requirements of the project.

3.1.5 Task-5

3.1.5.1 Description:

SPMP-T5555 Prepare Software Test Description (SDD) document.

3.1.5.2 Deliverables and Milestones:

Tex and pdf files.

3.1.5.3 Resources Needed:

Latex editor software.

3.1.5.4 Dependencies and Constraints:

The tester is able write test case that would efficiently cover all the functionalities of the project.

3.1.5.5 Risks and Contingencies:

The tester is unsure about how a certain module can be effectively tested.

3.1.6 Task-6

3.1.6.1 Description:

SPMP-T6666 Write code for module one .

3.1.6.2 Deliverables and Milestones:

Python files or C++ (code that will check the similarity of the two images in percentage.)

3.1.6.3 Resources Needed:

Turbo c++ Python editor- OpenCv v2.7

3.1.6.4 Dependencies and Constraints:

The developer has a clear plan based on the requirements mentioned in the SRS document.

3.1.6.5 Risks and Contingencies:

The functionality of the module is unclear to the developer.

3.1.7 Task-7

3.1.7.1 Description:

SPMP-T7777 Write code for Module two.

3.1.7.2 Deliverables and Milestones:

Python files(Code that will detect Motion and Face in a Video)

3.1.7.3 Resources Needed:

Turbo C++ Python editor-OpenCv v2.7

3.1.7.4 Dependencies and Constraints:

The developer has a clear plan based on the requirements mentioned in the srs document.

3.1.7.5 Risks and Contingencies:

The functionality of the module is unclear to the developer.

3.1.8 Task-8

3.1.8.1 Description:

SPMP-T8888 Checking the hardware interface

3.1.8.2 Deliverables and Milestones:

Establish seamless connection between Camera , Raspberry Pi and the relay circuit.

3.1.8.3 Resources Needed:

camera ,Raspberry Pi and Relay Circuit

3.1.8.4 Dependencies and Constraints:

The developer has in depth knowledge of working of the Hardware used.

3.1.8.5 Risks and Contingencies:

The module is yet not ready according to the schedule.

3.1.9 Task-9

3.1.9.1 Description:

SPMP-T9999 Building a Prototype for testing.

3.1.9.2 Deliverables and Milestones:

A basic working model

3.1.9.3 Resources Needed:

A computer with a WebCam,Raspberry Pi,Relay Circuit and a small set of toys for representing a classroom.

3.1.9.4 Dependencies and Constraints:

The System is ready for testing and the Software Test Description (STD) document has been prepared beforehand.

3.1.9.5 Risks and Contingencies:

The module is yet not ready according to the schedule.

3.2 Assignments

Team Member	Task
Mr. Pranil Bhavsar	Design solutions, prepare project models (use-case and class diag
Ms. Kavya Purushothaman	Programming and testing of first module
Mr. Bhavya Shah	programming and testing of second module

3.3 Timetable

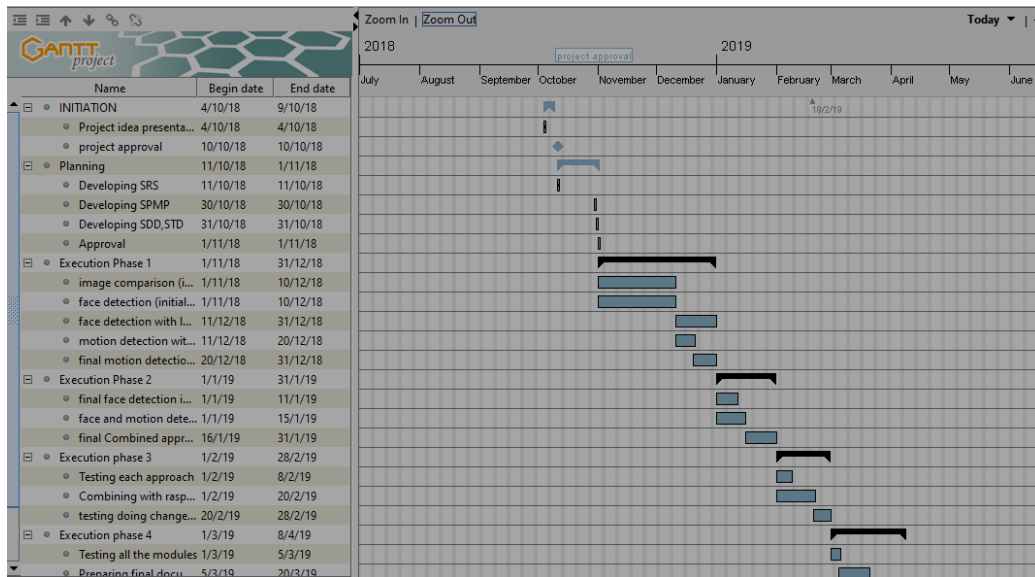


Figure 3.1: Gantt chart