Automated Software Cost and Effort Estimation System

Final Year Project Documentation

Submitted by

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Abstract

Cost and effort estimation is a critical part of any major project. A wrong estimate can lead to a catastrophic failure. According to a survey, over 60% of all software projects fail to complete within their estimated cost and time budget. On top of that, our methods for calculating the cost and effort of a software project are not very accurate. Most of the organizations make project managers calculate the current project's cost and effort by comparing it to a similar project they have completed before. This method is flawed since it assumes that the features of the project are excatly the same as the features of the previous projects. This is obviously not true as different project have different features that are driven from their scope, industry, and other factors. We aspire to develop system that can introduce new and far better solutions to the problem of cost and effort estimation. Our system will provide many ways of estimating effort including custom machine learning techniques, traditdional mathematical methods as well as providing a platform to make manual estimations and discussion between experts and managers, easier and seamless.

Dedication

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Acknowledgements

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Abstract

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Outline

- Introduction
- Purpose
- Objectives
- Existing Solutions
- Proposed Solution
- Novelty
- Executive Summary

1.1 Introduction

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1.2 Purpose

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1.3 Objective

Following are the most important objectives of the project.

- Improve the accuracy of software cost and effort estimation techniques.
- Get upto 50% of software development organizations to swtich to automated software cost and effort estimation techniques.
- Get managers to switch to our product by automating their current estimation workflows and then integrating our specialized techiniques with their existing workflows.
- Making our product compatible with most of today's tredning programming languages and their popular frameworks.
- Making our product relevant among the software development organizations and get 20 large software development organizations and/or 50 medium scale organizations to switch to our product by the end of 2023. And to integrate our product with their existing management routines.

1.4 Existing Solutions

There are a few existing solutions in this problem space. Some of them are now not maintained and are deprecated. Following is a list of similar projects

- **SEER For Software**
  SEER is a general purpose estimation tool that also has a product for software projects' estimation. It accepts input in form of SLOC (Source lines of code), function points, use cases and some more less popular options. After processing these inputs using proprietary models, the output of the program is as follows: Project time duration, development hours and accuracy of estimations.
- **TruePlanning ®**
  This product is calculates its estimates using the PRICE model. Developed in 1975, TruePlanning is also a general purpose estimation system.

1.5 Disadvantages

Following are some serious shortcomings or disadvantages with the currently existing solutions

- Outdated models that cannot adapt to today's rapidly changing and extremely diverse development languages and frameworks.
- No platform to enable communication between management and developers to discuss and agree to a better estimate
- Older and less commonly used input formats like SLOC and function points
- Outdated subscription methods. All of these prgorams implement a *One Time Payment* method. The disadvantage here is that the one time payment is a huge sum of money and may throw off a potential customer's interest in the product.

1.6 Purposd Solution

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1.7 Novelty

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1.8 Executive Summary

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2 Software Requirements Specification

Abstract

In this chapter, We will discuss our functional requirements and non-functional requirements that will be used later on. There are two types of requirements i.e Functional Requirement and Non-Functional Requirements. functional requirements define what the system does or must not do, non-functional requirements specify how the system should do it. Non-functional requirements do not affect the basic functionality of the system (hence the name, non-functional requirements).

Outline

- Introduction
  - Purpose
  - Scope
- Overall Description
- User Characteristics
- Specific Requirements
  - Functional Requirements
  - Non-Functional Requirements

2.1 Introduction

2.1.1 Purpose

Here, is the purpose of our project is that the Cost Estimation is major component of planning a large scale software project.A wrong estimate of the project's effort can lead to disastrous outcomes.Project managers can under estimate as well as overestimate a project's effort, so it is crucial to correctly estimate the complexity of our project in order to deliver the product on time, provide a much better developer experience and most importantly, don't go over budget.

2.1.2 Scope

The Major Scope of our Project is to estimate actual cost of the project and helpful to managers of the software industry are likely easy to calculate the budget of the developing software. and also ease to assigned the developer to the particular developing software.

2.1.3 Definition acronym & abbrevation

The following acronym are used in our documents

- **MERN:** MongoDB ExpressJS ReactJS NodeJS
- **REST:** Restfull
- **API:** Application Programming Interface
- **DB:** Database
- **SRS:** Software Requirements Specification
- **UCP:** Use Case Point
- **SPA:** Single Page Application
- **CBR:** Content Base Reasoning
- **FRs:** Functional Requirements
- **NFRs:** Non-Functional Requirements

2.2 Overall Description

2.2.1 Product Perspective

Our Final Year Project is SPA(Single Page Application). To reduce the difficulties for those managers who feels difficulties to estimate the actual effort/cost of the upcoming project. Managers can also some other modules except the Estimation i.e **View/Update project** and **Add/Remove Developers** in a project. Other than manager, there is a developer module in which developer can View and inform estimation of the project. Manager also have option to use our all methods for estimation as well as choose only one or two for calculating the actual estimate of the project.

System Interfaces: Our Proposed system is built from the scratch from the modern technology and add one feature from the exciting application.

User interface: The interface of the website is designed to be simple and interactive and be Single Page Application to improve the user experience. For attracting the developer and managers, we have facilitate them to change the theme of the system as they can feel to easy for work. As we know who attract with our system has well knowledge of how to operate a website but we kept as easy to operatable.

Prototype Prototype lgani ha yahan

Hardware Interfaces The website can be used on any device such as a mobile phone laptop, computer or a tab as long as it has active Internet connection.

Software Interface Software interfaces include operating system for the computer, a browser to access the website with internet connectivity.

2.2.2 Product Funtions

Product Function are divided into three categories depending upon the type of user. Product Functions are follows: Manager , Developer , Software Association

Functional Requirements table without description or with description likhni wahan

2.2.3 Functional Requirements of User

ID:	**FR-01**			
Name:	Register			
Description	**Input**	**Output**	**Requirements**	
Enter details for Register	Name, Email, Password, PhoneNumber,	Successful Register	Internet Connectivity	Enter details t

Table 1: Functional Requirement about Register

ID:	**FR-01**			
Name:	Register			
Description	**Input**	**Output**	**Requirements**	
Enter details for Register	Name, Email, Password, PhoneNumber,	Successful Register	Internet Connectivity	Enter details t

Table 2: Functional Requirement about Register

2.3 User Characteristics

Application User

After the compeletion of project, application user will able to estimate the budget as well as effort of the new project and later on it will be save for the future if any similar project will be arrive they make sure the effort of that type of software will be this. Application User will easily entertain their client with the almost accurate budget.

2.3.1 Constraint

The application need an internet access it will not work without internet access.

2.3.2 Assumptions and dependencies

- This Application will target the Managers of the Software Associations to find the almost actual effort as well as budget of the upcoming project.
- User should know the basic knowledge of the system.

2.3.3 Non Functional Requirements

Usability Usability of the system is high because it is easy to use. Names of choices are very clear and according to their functionality. Its interface is not difficult as user can understand everything clearly and use its functionality without any confusion.

Maintainability System will be developed module wise so Maintainability will be achieved by architecture.

Reusability The application designed so that its code can be reused in other application similar to this application and as well as in other applications.

Response Time Response time depends on the speed of internet of user. Higher the spped of internet higher will be the reponse time.