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Interactive 3D Visualisation of Exoplanets

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Abstract

A short description of the project goes here.

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Chapter 1

Introduction

This project seeks to design, implement, and evaluate an interactive 3D visualisation software system for displaying the content in the Kepler Exoplanets dataset [28].

The deliverable is

The resulting system will

1.1 Problem Statement

many planets that have been located outside of our own solar system, these are called exoplanets

1.1.1 Understanding the content in the dataset

Understanding and analysing large datasets whose size defies simplistic analysis is a known issue that many areas of research are attempting to address from datamining to discover SOMETHING HERE in the data itself to visualisations to convey the information in a visual manner. All of these research methods involve finding and displaying important aspects of the data so that users can more efficiently use it.

The content in the dataset used for this project is made up of records of each exoplanet discovered, each of which contains 46 fields.

1.1.2 Comprehension of planetary information

1.1.3 Effective user interaction with visualisation

1.2 Key issues project addresses

To summarise the above sections, this project addresses the following key issues:

- 1.

1.3 Contributions of this project

Chapter 2

Project Methodologies

2.1 Project management approach

The project methodology followed in this project was using a spiral model. This model used included requirements analysis, design, implementation, and evaluation phases. These phases For each feature produced in the visualisation a full iteration of the spiral was com-

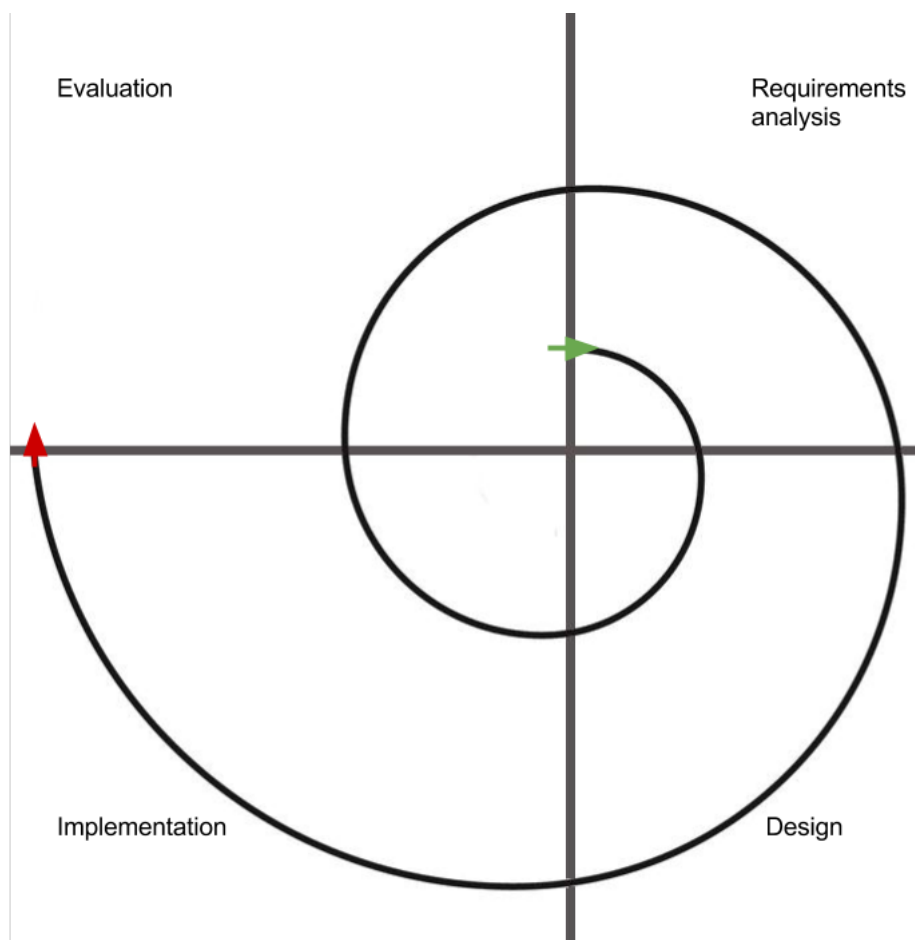


Figure 2.1: Spiral process model followed

pleted.

This project management technique supported the creation of a visualisation as

The advantages of this methodology over others such as stricter models such as the waterfall model or a looser agile approach.....The reason that this was effective.....

The choice of this project management approach meant

Weekly meetings with the supervisor of the project, Dr Stuart Marshall, were used to provide guidance and

Using using other supporting project management techniques such as Gantt charts [APPENDIX] and work breakdown structures(WBS) [APPENDIX] allowed efficient documentation of planning and work completed in the project as well as displaying the following stages required to complete the project.

2.2 System design approach

By choosing to expand on an already existing system

2.3 Key difficulties encountered

As this project builds upon a previous system much of the existing code and execution flow needs to be modified. This requires understanding of how the system was originally built and designed. Because this system does not have any unit or integration tests, going ahead without a comprehensive knowledge of the core functionality would be foolish.

Having a time constraint of 300 hours for this project over the course of a year meant that

Chapter 3

Requirements Analysis

The use of User Centered design in this project afforded a method of

3.1 User models

3.2 Scenarios

3.3 Requirements summary

3.4 Existing systems

Chapter 4

Solution Design: Improved Kepler Visualisation Tool

4.1 Design Features

Chapter 5

Visualisation implementation

5.1 Technology choice

5.1.1 System design and structure

5.1.2 Tools and artifacts used

Chapter 6

Visualisation implementation

6.1 Technology choice

6.1.1 System design and structure

6.1.2 Tools and artifacts used

Chapter 7

Conclusions

The conclusions are presented in this Chapter.

Bibliography