Debugging Problems

Patrick Farmer

Supervisor: Dr. Jonathan Dukes

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Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

A Dissertation submitted in partial fulfillment of the requirements for the degree of MAI in Computer Engineering.

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Contents

1 Acronyms **5**

2 Introduction **6**

2.1 Context 6

2.2 Goals 6

2.3 Outcome 6

2.4 Evaluation Metrics 6

2.5 Structure of the Dissertation 6

3 Background **6**

3.1 Literature Review 6

3.2 Summary of LLMs 6

4 Design and Implementation **6**

4.1 Design Overview 7

4.2 Ollama 7

4.3 Code generation 7

4.4 Test case generation 7

4.5 Bug Insertion 7

4.5.1 LLM Bug Insertion 7

4.5.2 AST Bug Insertion 7

5 Testing and Evaluation **7**

5.1 Metrics 7

5.1.1 Code Complexity 7

5.1.2 Code Diversity 7

5.1.3 Attempt Count 7
5.1.4 Run Time 7

6 Conclusion **7**

7 References **8**

1 Acronyms

2 Introduction

This is a brief description of the project. It will also have a guide to the repository

2.1 Context

2.2 Goals

2.3 Outcome

2.4 Evaluation Metrics

2.5 Structure of the Dissertation

3 Background

This will dicuss the need for the project and similar projects that have been done in the past

3.1 Literature Review

Literature review of both debugging, teaching debugging and LLMs

3.2 Summary of LLMs

4 Design and Implementation

This will discuss the design and implementation of the project. This will include a diagram at the beginning showing the heirarchy of the project.

4.1 Design Overview

4.2 Ollama

4.3 Code generation

4.4 Test case generation

4.5 Bug Insertion

4.5.1 LLM Bug Insertion

4.5.2 AST Bug Insertion

5 Testing and Evaluation

This will discus the testing of the project which will show the improvement of the project over time. This will also include an evalution of the final state of the project.

5.1 Metrics

5.1.1 Code Complexity

5.1.2 Code Diversity

5.1.3 Attempt Count

5.1.4 Run Time

6 Conclusion

This will briefly summarise the project and discuss the future of the project.

7 References

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