Using an Energy-Based Model to provide rewards to a Reinforcement Learning agent for the control of a robot arm.

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Submitted by: Peter Coates

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Declaration

This dissertation is submitted to the University of Bath in accordance with the requirements of the degree of Bachelor of Science in the Department of Computer Science. No portion of the work in this dissertation has been submitted in support of an application for any other degree or qualification of this or any other university or institution of learning. Except where specifically acknowledged, it is the work of the author.

Abstract

⟨The abstract should appear here. An abstract is a short paragraph describing the aims of the project, what was achieved and what contributions it has made.⟩

Contents

List of Figures

List of Tables

Acknowledgements

Add any acknowledgements here.

Chapter 1

Introduction

This is the introductory chapter.

1.1 Example Section

Like all chapters, it will have a number of sections ...

1.1.1 Example Subsection

... and subsections ...

Example Sub-subsection

... and sub-subsections.

1.2 Another Section With a Long Title and Whose Title Is Abbreviated in the Table of Contents

Table 1.1: An example table

Items	Values
Item 1	Value 1
Item 2	Value 2

Another section, just for good measure. You can reference a table, figure or equation using `\ref`, just like this reference to Table 1.1.

1.3 Example Lists

1.3.1 Enumerated

1. Example enumerated list:

    - a nested enumerated list item;
    - and another one.
2. Second item in the list.

1.3.2 Itemised

- Example itemised list.
    - A nested itemised list item.
- Second item in the list.

1.3.3 Description

Item 1 First item in the list.

Item 2 Second item in the list.

Chapter 2

Literature and Technology Survey

This is the chapter for your Literature and Technology Survey.

You will wish to cite authors like (Elguea-Aguinaco et al., 2023) or (Lobbezoo, Qian and Kwon, 2021). Alternate commands are used to cite Elguea-Aguinaco et al. (2023) as a noun, or add text to the citation, (*e.g.*, Lobbezoo, Qian and Kwon, 2021).

Try another citation with cite Fu et al. (2018) And another with citep (Du et al., 2020)

Chapter 3

Requirements

If you are doing a primarily software development project, this is the chapter in which you review the requirements decisions and critique the requirements process.

Chapter 4

Design

This is the chapter in which you review your design decisions at various levels and critique the design process.

Chapter 5

Implementation and Testing

This is the chapter in which you review the implementation and testing decisions and issues, and critique these processes.

Code can be output inline using `\lstinline|some code|`. For example, this code is inline: `public static int example = 0;` (we have used the character | as a delimiter, but any non-reserved character not in the code text can be used.)

Code snippets can be output using the `\begin{lstlisting} ... \end{lstlisting}` environment with the code given in the environment. For example, consider listing 5.1, below.

Listing 5.1: Example code

```
public static void main() {

  System.out.println("Hello World");

}
```

Code listings are produced using the package 'listings'. This has many useful options, so have a look at the package documentation for further ideas.

Chapter 6

Results

This is the chapter in which you review the outcomes, and critique the outcomes process. You may include user evaluation here too.

Chapter 7

Conclusions

This is the chapter in which you review the major achievements in the light of your original objectives, critique the process, critique your own learning and identify possible future work.

Bibliography

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Appendix A

Design Diagrams

Appendix B

User Documentation

Appendix C

Raw Results Output

Appendix D

Code

D.1 File: yourCodeFile.java

```
// This is an example java code file, just for illustration
    purposes
public static void main() {
  System.out.print ("Hello World");
}
```