**UNDERGRADUATE FINAL YEAR PROJECT PROPOSAL**

**ARTIFICIAL INTELLIGENCE FOR COMPLETE INFORMATION, TURN-BASED, BOARD GAMES**

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**Phrases**

#TurnBased #BoardGames #Games #MultiplayerGame #SinglePlayerGame #AndroidGames #Android #ArtificialIntelligence

**Overview**

In our leisure time we may need to play games in our mobile devices with no opponents available to play with, leading us to play against an A.I (computer).

The purpose of this project is to show the use of artificial intelligence for complete information in board games. The game will be applied in tic-tac-toe for mobile devices, android to be specific. The project will also give a clear understanding of what artificial intelligence (A.I) is all about and how it is applied.

The user will be able to launch the game and select a 2 player mode to play with a friend or some other player. Also the user will also be able to choose a single player mode and play against the A.I (Artificial intelligence).

Furthermore the game player will also be able to check his highest wins and losses, I mean a record of all games played.

**Aim**

ARTIFICIAL INTELLIGENCE FOR COMPLETE INFORMATION, TURN-BASED, BOARD GAMES. (APPLIED IN TIC TAC TOE FOR ANDROID)

**Objectives**

1. **Understanding A.I in games**

**Activities**

* read about A.I
* read about A.I for games
* read about type of A.I for board game (minimaxing/decision tree)

**Deliverables**

* Report of at least 1000words about A.I
* Report of at least 1000words about A.I for games
* Report of at least 1500words about type of A.I for board game

1. **System Development Methodologies**

**Activities**

* Read about system development methodologies
* Choose appropriate methodology

**Deliverables**

* Report of at least 1000words about development methodologies
* Report of at least 500words about chosen methodology

1. **Data Gathering**

**Activities**

* Evaluate similar game
* Identify requirements

**Deliverables**

* Report of at least 500words evaluating a similar game
* Requirements specification

1. **Data analysis**

**Activities**

* Create context diagram
* Create use case (level 0 and 1)
* Create use case narrative (only for complicated use cases) if any
* Create Activity diagram (only for complicated use cases) if any

**Deliverables**

* Context diagram
* Use case diagram (level 0 and 1)
* Use case narrative
* Activity diagram

1. **Design**

**Activities**

* Database design
* Functional design
* Design GUI

**Deliverables**

* Data flow diagram (DFD)
* Entity relationship diagram (ERD)
* Class diagram
* 500 words about interface design
* Game prototype

1. **Implementation**

**Activities**

* Database implementation
* Implement functionality
* Code GUI

**Deliverables**

* Database
* Game App

1. **Testing**

**Activities**

* Usability testing
* Test cases

**Deliverables**

* Usability testing results
* Documented test case

1. **Project Evaluation**

**Activities**

* Critical evaluation of built game

**Deliverables**

* Report of at least 1000words evaluating the built game

1. **Conclusion**

**Activities**

* Future enhancements & lesson learnt

**Deliverables**

* Report of at least 200words of conclusion

**Legal, Social, Ethical and Professional issues**

The main functionality of the proposed game is that it will contain an A.I for users to be able to play with without having an opponent. This main functionality needs to be implemented carefully with a simple and attractive interface design to make sure it functions properly as the proposed game will be for a wide range of users and if possible to attract bigger companies to buy the product. Not to forget that all other requirements must be met too.

**Required Resources**

* Laptop
* Internet
* Microsoft office
* Android studio
* Android phone or emulator

**References**

Ian Millington, John Funge (2009). *Artificial Intelligence for games*. USA: Morgan Kaufmann.

//Book about minimaxing

**Schedule**

To be done soon…..15/11/15

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S/NO** | **ACTIVITY** | **DURATION** | **START** | **END** | **NOTE** |
| 1 | Introduction to project |  | 20/4/2015 | 1/5/2015 |  |
| 2 | Writing project proposal |  | 5/4/2015 | 5/22/2015 |  |
| 3 | Project planning and structure |  | 5/27/2015 | 6/17/2015 |  |
| 4 | Holiday |  | 6/18/2015 | 7/27/2015 |  |
| 5 | Read about A.I |  |  |  |  |
| 6 | Read about A.I for games |  |  |  |  |
| 7 | Read about type of A.I for board game |  |  |  |  |
| 8 | Read about system development methodologies |  |  |  |  |
| 9 | Choose appropriate methodology |  |  |  |  |
| 10 | Evaluate similar game |  |  |  |  |
| 11 | Identify requirements |  |  |  |  |
| 12 | Create context diagram |  |  |  |  |
| 13 | Create use case level 0 |  |  |  |  |
| 14 | Create use case level 1 |  |  |  |  |
| 15 | Create use case narrative |  |  |  |  |
| 16 | Create Activity diagram |  |  |  |  |
| 17 | Data flow diagram (DFD) |  |  |  |  |
| 18 | Entity relationship diagram (ERD) |  |  |  |  |
| 19 | Class diagram |  |  |  |  |
| 20 | 500 words about interface design |  |  |  |  |
| 21 | Game prototype |  |  |  |  |
| 22 | Database implementation |  |  |  |  |
| 23 | Implement functionality |  |  |  |  |
| 24 | Code GUI |  |  |  |  |
| 25 | Usability testing |  |  |  |  |
| 26 | Test cases |  |  |  |  |
| 27 | Critical evaluation of built game |  |  |  |  |
| 28 | Future enhancements & lesson learnt |  |  |  |  |