**IMAT3451 Project Contract**

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**Programme: Computer Games Programming**

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**Project Title: Procedural Content Generation for Mobile Games**

**Project Proposer**

Jethro Shell, Games and Information Systems, [jethros@dmu.ac.uk](mailto:jethros@dmu.ac.uk)

**Supervisor**

See above.

**BCS Accreditation**

Your supervisor needs to check your contract against this list and sign if you are on a BCS accredited course. Take note of this and be sure that you mention all requirements.

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| --- | --- | --- | --- | --- | --- |
| This contract contains an elucidation of the problem, the objectives of  the project and a risk analysis | | | | **Yes** | **No** |
| The contract states that the project will include an in-depth investigation of the context and literature, and where appropriate, other similar products | | | | **Yes** | **No** |
| The contract states that the final report will contain a clear description of the stages of the life cycle undertaken | | | | **Yes** | **No** |
| The contract states that the final report will contain a description of how verification and validation were applied. | | | | **Yes** | **No** |
| The contract states that the report will contain a description of the use of tools to support the development process | | | | **Yes** | **No** |
| The contract states that the final report will contain a critical appraisal of the project, indicating the rationale for any design/implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the project outcome and the process of its production (including a review of the plan and any deviations from it) | | | | **Yes** | **No** |
| The contract states that there will be a description of any research hypothesis | | | | **Yes** | **No** |
| The contract states that all research will be fully referenced | | | | **Yes** | **No** |
| **Contract is suitable for BCS Accredited Project** | **Yes** | **No** | **Supervisor**  **Signature** |  | |

**Introduction**

The aim of the project is to develop a tool/plugin for the procedural content generation of levels within mobile games using evolutionary algorithms.

**Project Background**

The cost to develop video games has drastically risen over the past few years due to the increasing demands from gamers for more expansive and detailed games. It is clear that hand crafting all aspects of a game is not a sustainable model and alternative development practices must be explored. Procedural content generation (PCG) is a promising solution to this issue and has already seen great success in several games. PCG can be used as both a development tool that produces the bulk of the work while a developer adds the final touches or as the basis of the entire game. While PCG is most commonly used for the generation of the game world (level/environment) it can be applied to almost all forms of game 'content' such as textures, agents, items and even the narrative.

**Aim/Objectives/Deliverables**

This is the heart of the Contract, and will require discussion with your supervisor and possibly several iterations to get it right. It is against the objectives and proposed deliverables that the final product will be assessed. So it is important to ensure that all aspects of the assessment criteria (see Blackboard) are included in the list of objectives/deliverables.

**Aims**: Develop a procedural content generation system to generate levels within mobile games.

**Objectives**: a list of specific, measurable objectives, each of which is likely to result in a deliverable. They specify all the work tasks to be undertaken to meet the stated aim. They will vary from project to project, as every project is different, but some examples are provided below.

* To investigate current evolutionary based content generation techniques and create a suitable design.
* To review and report on current procedural content generation techniques and their uses within the industry.
* To investigate the system requirement and produce a requirements specification.
* To develop a procedural content generation tool for the creation of game levels incorporating the player context and making use of an evolutionary algorithm.
* To develop a simple game demonstrating the procedural content tool
* To design and execute a suitable test plan

**Deliverables:**

(First delivery)

* Project contract
* Ethics form
* Project Plan
* Literature review
* System requirements specification
* Design Documentation
* Test Plan
* Prototype

(Final delivery)

* Final report (including critical evaluation, conclusions and recommendations)
* Appendices
  + fully cited research
  + any further design documentation
  + test logs
  + Final burn down chart of all sprints
* Content Generation plugin/tool
* Simple game demonstrating it's use.

**Resources and Constraints**

* Android Studio IDE
* Range of Android compatible devices
* Github repository

**Sources of Information**

* Julian Togelius. Search-Based Procedural Content Generation: A Taxonomy and Survey, *IEEE Transactions on Computational Intelligence and AI in Games,* [Online], 2011, Vol 3. Available from: <http://ieeexplore.ieee.org/document/5756645/> [Accessed 07/10/16]
* IEEE Digital Library
* Internet
* Library

**Risk Analysis**

* *Underestimated scope of project / project beyond ability to complete –* Work with supervisor to redefine project to a more achievable goal.
* *Task underestimated or took longer than expect –* Will be using an agile development approach so the priority of tasks and scope of the project can be adjusted on a sprint to sprint basis.
* *Loss of personal computer / hard drive failure –* Work will be backed up in a private GitHub repository so switching to another PC will be a minor loss of progress.

**Schedule of Activities**

Having defined the tasks to be undertaken in the list of objectives, you need to prepare a Project Plan to show how you intend to carry them out: You may find it helpful to draw up a critical path diagram before drawing a Gantt chart.

**Student\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Proposer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Supervisor\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**