Pathfinding Project Plan

Sarah Kushner Neil Castelino Angel Delgado Carlo Rosati Chris Khedoo

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1 Revision History

Name	Date	Comment	Version
All	10/12/15	Initial project plan document	1.0

2 Background

A Unity plug-in that allows users to automatically animate "characters" under a set of constraints by drawing a rough path from the character to a desired destination.

2.1 Features

(See more in the Customer Requirements Document)

- Ability for user to draw a line in 3D space from a selected object to its destination
- The hand-drawn line to give a rough idea of the motion
- Path planning techniques to calculate paths that matched the lines (as close as possible)
 - Genetic programming
 - Constraint-based optimization
 - Possibly look into a third option, reinforcement learning
- Path should also satisfy physical constraints
 - Size and shape of character
 - Obstacles in the scene e.g. walls, water
 - Preferences of character (we will need some metric to narrow down multiple viable paths)
- Present this functionality in the form of a plug-in to a game engine or animation software

3 Statement of Work

3.1 Unity UI prototype

A prototype will be produced in order to ensure the viability of this project.

3.2 Infrastructure setup

This includes setting up the repository, automated build setup, ticket software, and any other tools needed for this project.

3.3 UI Specifications

Specifications relating to the Unity UI and how the user will use to engage with the core functionality.

3.4 Core Functionality Specifications

Specifications relating to the core features of the project.

3.5 UI Test Plan

The plan on how the UI will be tested and what criteria will correlate to successful implementation. The final phase of this testing will be User acceptance testing.

3.6 Core Functionality Test Plan

This plan will contain unit tests and any testing suites that need to be used in order to ensure all core functionality requirements are implemented.

3.7 Weekly Defect Reports

During development a weekly report will be compiled that will include new defects and progress on existing defects. This is meant to be a tool to assist in timely defect resolution. Solutions to roadblocks and action items relating to defects can be addressed here.

3.8 UI Development

Development of the UI in Unity.

3.9 Core Functionality Development

Development of the core functionality.

3.10 Product Manual

A manual will need to be produced to assist users and explain the functionality of the product.

4 Resource List

4.1 Hardware

• Proper hardware to run Unity with best results

4.2 Software

- Proper OS to develop Unity plug-ins (Windows or OSX)
- Student version of Unity
- Student version of Autodesk Maya
- Student version of Unreal Engine

5 Assumptions

Users should have general knowledge of how Unity works and is operated.

6 Schedule

Weeks marked with (F) denote finals week, and weeks marked with (H) denote holidays.

6.1 Term 1

Fall 2015 Goals:

- Define Project Plan
- Define Customer Requirements

- Define Requirements Specification
- Begin Design Specification
- Begin Preliminary Development with core functionality for a prototype (This way, we can hopefully spot some expected problems noted in Section 7 early on in the process.)

Week	Date	Work	Done?
1	09/21/15	Form group	yes
2	09/28/15	Solidify idea	yes
3	10/05/15	Preliminary Plan document	yes
4 (H)	10/12/15	Plan document	
5	10/19/15	Customer requirements document	
6	10/26/15	Customer requirements document	
7	11/02/15	Requirements specification	
8	11/09/15	Requirements specification and Design	
9	11/16/15	Design specification	
10 (H)	11/23/15	Design specification and Beginning dev	
11	11/30/15	Prototype development	
12 (F)	12/07/15	Finalize Requirements	

6.2 Term 2

Winter 2016 Goals:

- Finalize Design Specification
- Continue Prototype Development with core functionality, Unity is a priority
- Iteratively change Requirements and Design as needed based on Protype
- Tighten up development and determine how we can extend our product in the time remaining
- Release versions of product with limited functionality

• Begin Testing on completed features

Week	Date	Work	Done?
1	01/04/16		
2	01/11/16		
3 (H)	01/18/16		
4	01/25/16		
5	02/01/16		
6	02/08/16		
7	02/15/16		
8	02/22/16		
9	02/29/16		
10	03/07/16		
11 (F)	03/14/16		

6.3 Term 3

Spring 2016 Goals:

- Continue and finalize Development
- Develop extensions for Maya and Unreal, if time allows
- Continue and complete Testing on all features
- Prepare final release

Week	Date	Work	Done?
1	03/28/16		
2	04/04/16		
3	04/11/16		
4	04/18/16		
5	04/25/16		
6	05/02/16		
7	05/09/16		
8	05/16/16		
9	05/23/16		
10 (H)	05/30/16		
11 (F)	06/06/16		

7 Risks

7.1 Schedule

- One or more parts of the project may not work as expected due to its complexity
- We may have delays due to unforeseen events
- Project gets rushed and some areas of the project get neglected
- Team members dont have a set time to meet with the group

7.2 Requirements

- Requirements may change unexpectedly
- Requirements are not fully known at the start of the project
- Some requirements may be neglected as a lower priority but in reality would be a higher priority
- Projects target audience, focus, or goals change unexpectedly

7.3 Technology

- Certain team members have little to no experience with animation which may lead to delays
- Editor/Development suite may be buggy and lead to delays

7.4 Management

- Project doesn't get reviewed often and we lose track of our progress
- Project members havent yet found out the constraints for each problem they might encounter
- One person assumes the role of multiple management roles

7.5 Customer

- Customer might want to change the requirements unexpectedly in a major way
- Customer might want a change in the schedule which the team members cant comply with