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Andrew Brand
Meg Jones
Senior Design 2021/2022 DHF

PROPOSAL OUTLINE

A. Title, Team

a. EECE5031 COMPE Senior Design 1, 001, team #9, Real-time 2D Differential Game Combat Simulation, team members: John Peecook, Andrew Brand, Meg Jones, Advisor:John Gallagher, 9/27/21

B. Introduction

a. This report is to introduce the readers to our project and understand our process when developing this tool
b. The purpose of the project is to create a battlefield simulator for testing battlefield scenarios
c. We will create a software project that will function as a simulation
d. We are two computer engineering majors as well as a computer science major with a focus on software and coding
e. Summary of Proposal
    i. Many plane and other vehicle designs need to go through a large amount of development just to be properly tested but with a simulation many aspects can be tested during the design phase to reduce the amount of time and resources spent.
f. Background info

C. Discussion -

a. Problem
    i. Many plane and vehicle designs are too difficult to test in the real world.
    ii. Explain why it is a problem (references)
        1. This wastes time and money before it is developed enough to test a design.
        2. The time and money could be much better spent on a more refined design.
        3. Only so much can be tested on paper so the plane must be at least partially completed for much of its testing.
b. solution/methodology
    i. Clearly define the solution
        1. The solution is to make a simulation where designs can be thoroughly tested without much of the development.

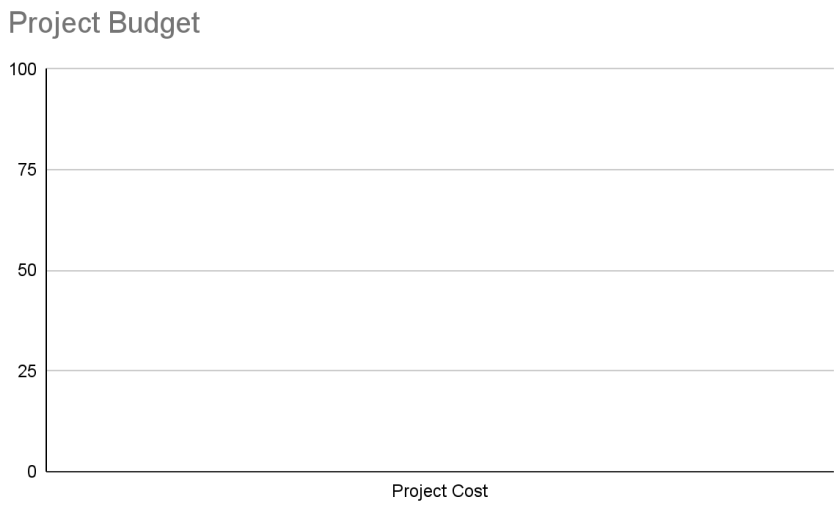
ii. Explain why it is a solution
    1. This saves most of the time and money that would go into getting it testable.
    2. The low overhead of simulating it can not being beaten by using a real world test as so little is needed for the simulation.
iii. Clearly explain how to implement the solution
iv. We are all software focused students, with two computer engineers with an affinity for coding, and a computer science student.

c. Implementation
    i. Time
        1. Chart: Project-scheduling charts (Gantt chart)

WBS	Tasks	Task Lead	Start	End	Duration (Day	% Complete	Working Days	Days Complet	Days Remainir
1	Reasearch	[Name]	10/4/21	10/19/21	7	100%	12	7	0
1.1	Decide on Project	Andrew	10/4/21	10/19/21	15	100%	12	15	0
1.1.1	Find Advisor	Meg	10/4/21	10/19/21	15	100%	12	15	0
1.1.2	Research	Brandon	10/19/21	12/1/21	50	20%	32	10	40
1.1.3	Simulation Design	Andrew	12/1/22	12/31/22	31	0%	22	0	31
1.2	AI implementation	Meg	12/15/21	1/15/22	31	0%	23	0	31
1.2.1	Scenario Creation	Brandon	1/15/22	2/14/22	30	0%	21	0	30
1.2.2	Agent Control Design	Andrew	2/14/22	3/1/22	14	0%	12	0	14
1.2.3	Bug Fixing	Meg	3/1/22	3/21/22	21	0%	15	0	21
1.2.4	Polish Before Presentation	Brandon	3/21/22	3/31/22	10	0%	9	0	10
2		[Name]	1/0/00	10/10/13	15	0%	18	0	22

30 - Sep - 21 | 07 - Oct - 21 | 14 - Oct - 21 | 21 - Oct - 21 | 28 - Oct - 21 | 04 - Nov - 21 | 11 - Nov - 21 | 18 - Nov - 21 | 25 - Nov - 21 | 02 - Dec - 21 | 09 - Dec - 21 | 16 - Dec - 21 | 23 - Dec - 21 | 30 - Dec - 21 | 06 - Jan - 22 | 13 - Jan - 22 | 20 - Jan - 22 | 27 - Jan - 22 | 03 - Feb - 22 | 10 - Feb - 22 | 17 - Feb - 22 | 24 - Feb - 22 | 03 - Mar - 22 | 10 - Mar - 22 | 17 - Mar - 22 | 24 - Mar - 22 | 31 - Mar - 22

        2. Mondays 4 PM, online over call, or in person in langsom library
        3. We believe this schedule to have a nice combination of flexibility so that it can adapt to our changing lives, while also keeping us responsible and on task
    ii. Budget



1.

2. At this time our budget is zero as we intend to use free/open source tools

d. Rationale/Benefits
    i. Chart: Visually show the advantages
    ii. Writing
        1. Explain the chart
        2. Explain the benefit of the project
        3. List of people who benefit
        4. Discussion of each area of benefit

D. Conclusion

a. This project will help keep people safer in the battlefield, perhaps the most dangerous place in the world, and if more widely developed and distributed it will keep casualties to a minimum.

E. Resources/References

a. If applicable, Use APA or IEEE format

Project specific tasks - CS Assignment #5

The 2D Simulation

- Devise plan for project development
- Make a 2D simulation engine
- Choose language for project (Python/Unity)
- Select from existing libraries for best integration

The Autonomous Control Strategies

- Collect or remake Autonomous Control files
- Make a wrapper to call Autonomous control files
- Apply Autonomous control files onto correct units
- Test autonomous control units to make sure they are reacting correctly

Usable GUI and Controls

- Apply GUI to simulation so parts can be seen
- Make agent selection gui
- Connect controls with controller
- Allow user to set mission parameters