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SoftDes Spring 18

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Final Project Proposal

The Big Idea:

Our project idea is to create a more advanced version of Tron. We are going to recreate the game with additional features like CPUs and varied playing fields. For our CPUs, we would first like to implement AI and as we go on, move to machine learning to control the CPUs. For more variety in the game, we would like to implement different playing fields as well as possible different playing modes. For our MVP, we would like to implement both AI and machine learning in our game to control CPUs that will allow for single player enjoyment. We imagine that we will implement different CPU difficulties with AI controlling the easier one and machine learning controlling the more difficult one. In addition we will increase the number of players available, improve the game interface, fix the bugs in the current code and implement obstacles on the playing field to increase the difficulty and variety. For our stretch goal, we would like to work on implementing interchangeable players and CPUs as well as creating a mode that creates interactive backgrounds through CPU control.

Learning Goals:

Naomi: For this project, I would like to focus on learning more about AI and machine learning. After the previous mini-project, I feel comfortable with the material that we have learned up to now and would like to work on going beyond and figuring out things for myself. In addition, I would also like to work on collaborative coding especially with a group larger than two people. I also want to work on different types of coding and using file imports rather than writing everything in one massive file.

Alex: Gain familiarity and comfort with efficiently collaborating on larger teams. Gain an understand of and proficiency in rudimentary, game-playing AI.

Jessie: My first main learning goal is to become better at communicating my code with the rest of the team, particularly when it is in progress. I would also like to be able to produce cleaner code that functions well. I also would like to learn the basics of AI and machine learning.

Project Implementation:

We will begin by gaining an understanding of game-playing AI, and attempting to implement it. Since our AI-related knowledge gap is our greatest risk, we are uncertain how long this step will take. Once completed, we will clean up the game, add graphics, and a clean packaging. If times remains, we will incorporated a ‘modes’ feature, likely with machine learning as per our stretch goals.

Schedule:

Main Tasks	Sub-Tasks	Week 1 (3/27-4/2)	3/29 Proposal	Week 2 (4/3-4/9)	4/3 AR Prep	Week 3 (4/10-4/16)	4/10 AR Ref
Cleaning Up Existing Code							
	Format For Collaboration						
	Debug Existing Code						
	Fix Collisions						
Figure out AI and machine learning							
	Add AI						
Add Obstacles							
Add Modes							
Add Clean Packaging							

Week 4 (4/17-4/23)	Week 5 (4/24-4/30)	4/24 Pres	4/24 Website MVP	Week 6 (5/1-5/8)	5/1 Website Updated	5/8 FINAL

Collaboration Plan:
We will use a peer-programming strategy during the earlier phases of the project, since none of us have any background in AI. After implementing the AI, we will likely split into working individually, since the remaining tasks involve material that we have all already been introduced to.

Risks:
We would like to incorporate AI and machine learning within our Tron game to make it better. However, none of us are familiar with these topics and we would need to spend time researching and learning about how to implement them into our game.

Additional Course Content (what we'd want to see taught in classes):
AI and Machine Learning