**Proposal of Simulation Technologies for Animation**

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**Course (delete if appropriate):** SDAGE

**Title** (up to 25 words): Predator/ Prey Crowd Simulation

**1. Summary** (a brief description of the project < 250 words):

1.1 Objectives:

To achieve an agent based crowd simulation consisting of collision detection and predator/ prey rules.

This will consist of prey agents acting moving independently avoiding collisions with other agents and with surrounding objects. The predator/ prey rule will mean if a predator agent comes too close to a prey agent, it will move away from the predator and the predator will move towards the prey.

As an extension I would like to add the feature that if one prey detects a predator the run flag will be spread throughout the crowd to the surrounding prey regardless of distance to the predator to simulate a stampede type effect. This would likely involve some king of nearest neighbour algorithm to detect the nearest agents.

1.2 Main simulation technologies or methods:

Crowd simulation using collision detection to avoid intersection with surrounding objects and agents and predator/ prey rules.

**A list of key references** (3-5 research papers and other material)

**https://link.springer.com/content/pdf/10.1057%2Fjos.2010.3.pdf**

[**http://www.math.uaa.alaska.edu/~orca/**](http://www.math.uaa.alaska.edu/~orca/)

**https://www.researchgate.net/profile/Takashi\_Ikegami/publication/13629583\_Emergence\_of\_Collective\_Strategies\_in\_a\_Prey-Predator\_Game\_Model/links/54dff8640cf24d184b0a915b.pdf**

**Implementation tools/software:**

Written in Python within Maya

**A reference image** (optional)**:**

