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Title of thesis: Extending Reynolds' flocking model to a simulation of sheep in the presence of a predator

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Both the problem statement with associated questions and the purpose is clearly defined. The existence of each question is well motivated and the underlying purpose is described fully by the title which defines the content well.

An introduction to Reynolds' flocking model is given, as well as examples where the model have been applied. A description of animal behaviour is given in the background to provide an introduction on flocking animal behaviour and how they can be simulated using Reynold's model. The definitions school, herd and flock is introduced, but the distinct difference between these terms are not clear. A modification of Reynolds' model is introduced by adding an additional rule to simulate escaping behaviour in the presence of a predator. Choosing Reynolds' model is well motivated due to its simplicity and accuracy on simulating flocking behavior.

Criticism to the method is also given by quoting Reynold that claims that his model is actually better in modelling schools and herds rather than flocks due to visual limitations. However the visual limitation is disregarded in this essay.

The results are structured, demonstrating several scenarios of flocking behaviour, both with and without pressure from a predator. The only unclear result is the scenario where a sheep is separated from the flock. It is claimed that the Escape rule is much stronger than the Cohesion rule but why is not mentioned. The softness factor is probably the variable affecting this, but it should be mentioned. Why the softness factor has been set to specific values should also be mentioned.

The conclusions seems credible because they have simulated a real life phenomena by extending a well known simulation model. The simulation results have also been compared to a similar real life experiment showing distinct similarities. Possible further research have been mentioned to improve the simulation, but the possible subsequent results of these improvements is not discussed.

The literature referred to is credible and consists of scientific publications relevant to the subject. Both analyzing previous scientific literature and providing own contributions are the most significant features of this essay. The results identified described several scenarios and corresponded with previous research. There were ambiguities on some definitions and some parameter choices lacked motivation. However, overall the essay was well motivated and displayed some interesting results.

Questions to author:

1. What is the motivation of choosing a softness factor of 1 for Separation and 10 for Escape. Are the values general or something that has been experimented with?

2. What would be the distinct improvements if additional sheep behaviours and other features

were implemented?

3. How would the escape rule be applied to a 3 dimensional scenario such as a school? What would be the results?