# Investigating the Impact of AI Techniques on Inter-Flock Dynamics

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# 1 Abstract

## 1.1 Context

Artificial intelligence is a rapidly expanding field, there is a clear useful context in their use in Flocking Techniques.

## 1.2 Aim

Investigate the impact of AI techniques on the dynamic interaction of flocks with each other to see if this has a beneficial effect in comparision to regular flocking algorithms.

## 1.3 Method - description here needs updating!

Using an application that models flocking behaviour (developed by the author), observe and compare AI flocking strategies to those of regular flocking algorithms. This will be developed using the AI techniques found to be most likely to produce viable intelligent flocking behaviour.

## 1.4 Results

The analysis of the effectiveness of strategies that the AI come up with in their interactions with other flocks, with contrast and comparison to the behaviour of standard flocking algorithms.

## 1.5 Conclusion

This project will display the flocking strategies that emerge in their interactions with other flocks, and conclude on their effectiveness in relation to other strategies and flock type. This will demonstrate the impact the AI techniques have on this kind of flocking interaction.

# 2 Background and Literature Review

Optional Introductory Paragraph - Flocking, since its initial algorithmic conception and discussion in academics

## 2.1 Flocking Algorithm

Reynolds and boids

## 2.2 Genetic Algorithm

## 2.3 The Research Landscape

Figure 1: A Boat.

# 3 Notes

This is an example of a citation in text: Reynolds (1987).
This is an example of a citation in brackets (Reynolds 1987).

Figure 1 shows a boat.

... when Einstein introduced his formula

$$e = m \cdot c^2 \;, \tag{1}$$

which is at the same time the most widely known and the least well understood physical formula

... from which follows Kirchoff's current law:

$$\sum_{k=1}^{n} I_k = 0 \;, \tag{2}$$

Kirchoff's voltage law can be derived ...

... which has several advantages.

$$I_D = I_F - I_R \tag{3}$$

is the core of a very different transistor model. ...

$$f(x) = x^2 \tag{4}$$

$$3 + 3 = 6$$
$$1 = 5 - 4$$

$$
\begin{aligned}
1 &= 5 - 4 \\
3 + 3 &= 6
\end{aligned}
$$

$$
\begin{aligned}
f(x) &= x^2 \\
g(x) &= \frac{1}{x} \\
F(x) &= \int_b^a \frac{1}{3} x^3
\end{aligned}
$$

Figure 2: Dummy figure

Table 1: Dummy table

# 4 Figure and Table Notes

# References

Reynolds, C. W. (1987), 'Flocks, herds and schools: A distributed behavioral model', *SIGGRAPH Comput. Graph.* **21**(4), 25–34.
**URL:** *http://doi.acm.org/10.1145/37402.37406*