

Department of Creative Informatics
Graduate School of Information Science and Technology
THE UNIVERSITY OF TOKYO

Master's Thesis

**Predicting 3D Bird Flock Motion From 2D
Projection**

2D プロジェクションによる鳥類の 3D モーションを予測する
方法

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Abstract

Bird flock animation plays an important role in making realistic outdoor scenes in games and movies. However, since making bird flock animation involves a large quantity of moving entities, it takes effort to create and control them. To solve this problem, we introduce a new approach to make this task easier. Our main idea is using a single-view RGB video as input. From the in-put video, by using animal tracking technique, the 2D position of each bird is retrieved in each frame. We then predict the depth information of each bird, which is based on Boids model, a flock simulation model. In our algorithm, depth of each bird in current frame is predicted by applying the force, which is calculated using factors from previous frames. The factors are based on Boids, With the predicted depth, the 3D bird flock animation is then generated. In this re-search, we focus on synthesizing 3D flock motion from 2D projection. Generating visually plausible result by the system is our goal. We evaluate our method by comparing the result with other results generated by other naive approaches.

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Chapter 1

IntroductionYa

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The results have partially been reported [1]. Some other experiments are also known [2, 3]. For further information, refer to [4].

Chapter 2

Body

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Fig. 2.1. The title of this figure

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$$\sum_{k=1}^n = \frac{1}{2}n(n+1) \quad (2.1)$$

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^{*2} This is a footnote.

2.2.3 Further

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Chapter 3

Conclusion

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[illegible][illegible]

Publications and Research Activities

- (1) Sota Akiba. Toward distinguishing this and that. Blahblah symposium, Aug 9, 2007.
- (2) Sota Akiba, Joichi Hongo. Improvements in analyzing geemie. *Journal of Blahblah*, Vol.1, No.1, pp.1–10, 2007. (in Japanese)
- (3) Sota Akiba, Joichi Hongo. Implementation of blahblah. In Proceedings of 5th Workshop on Geemie (WOG2008). pp.351–365, 2008.

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- [2] Donald Knuth. *The T_EXbook*. Addison-Wesley, Reading, MA, 1986.
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- [4] Creative Informatics web page. <http://www.ci.i.u-tokyo.ac.jp/top/index.html>, 2008.

Acknowledgements

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A

Source code

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int main () {  
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