

Authoring Tool High Concept Doc

Authoring Tool Name: ButterFlight

Team Members: Cecilia Chen and Yiding Tian

SigGraph Paper(s): “A Practical Model for Realistic Butterfly Flight Simulation,” Qiang Chen, Tingsong Lu, Yang Tong, Guoliang Luo, Xiaogang Jin, and Zhigang Deng, ACM Transactions on Graphics (TOG), 2022.

Summary:

ButterFlight is a Maya plugin (.mll) that lets animators and technical directors generate realistic butterfly flight animations using the force-based model proposed by Chen et al. The approach combines simplified aerodynamic lift/drag forces with a curl-noise vortex force to produce the erratic, noisy trajectories characteristic of real butterflies, including wing-abdomen interaction and dynamic body posture adjustments. Designed for VFX artists and TDs in film, games, and virtual environments, ButterFlight replaces tedious hand-keyed animation with a physically-inspired procedural simulation controlled through MEL-scripted UI panels. Typical uses include ambient butterfly swarms, hero shots along artist-specified paths, and wind interaction effects. The tool outputs keyframed skeletal animation on rigged butterfly meshes, exportable via Alembic or FBX.