

3D Snake Locomotion and Eating with Neural Networks

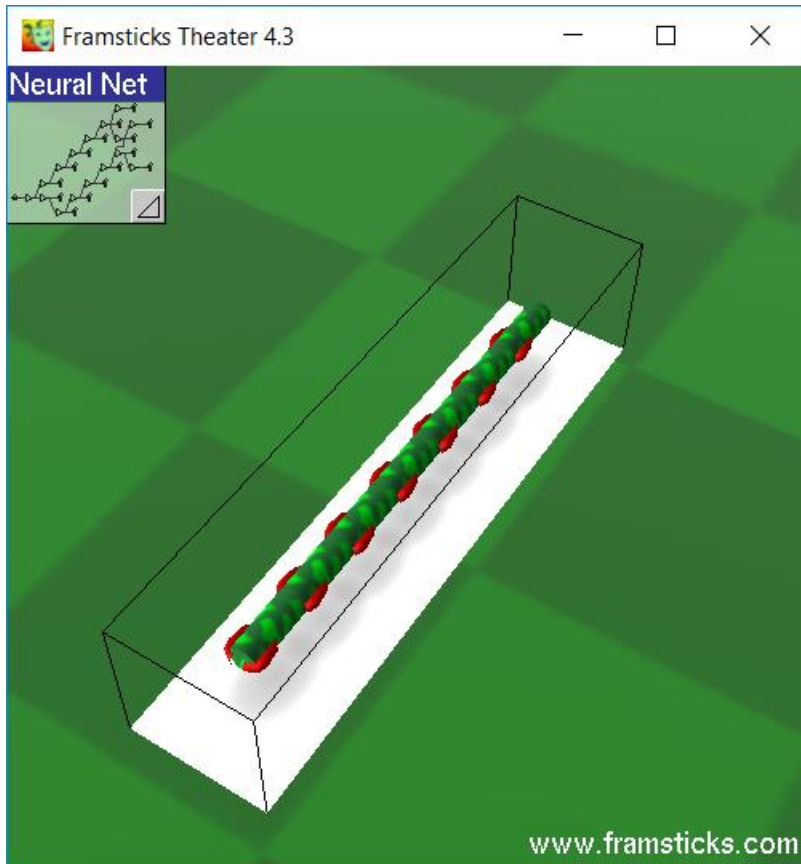
Khyati Pawde
Mansi Shah
Sakshi Goplani

Overview

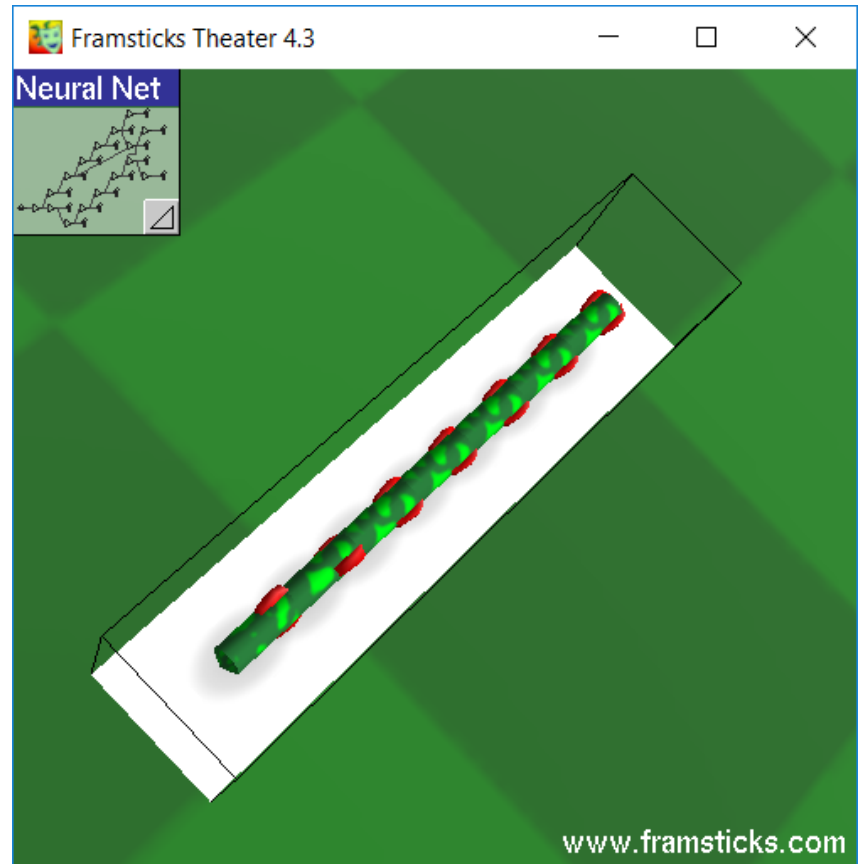
- **Environment:** Framsticks
- **Types:** Land Snake & Water Snake
- Locomotion
- Finding of food particles
- Ingestion of food and transference of energy to increase lifespan

Structure

Original:



Evolved:



Original Genotype

Genotype data. Genotype

Genotype

Body

Performance

Fitness

Conversions

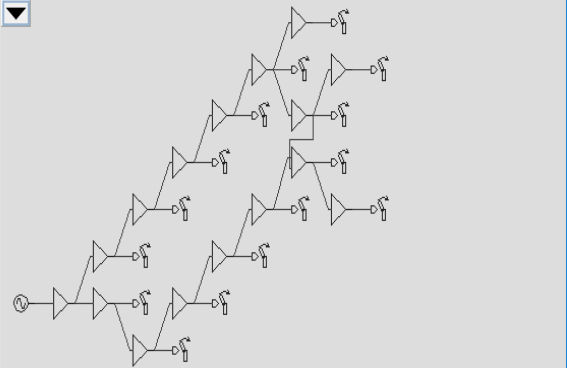
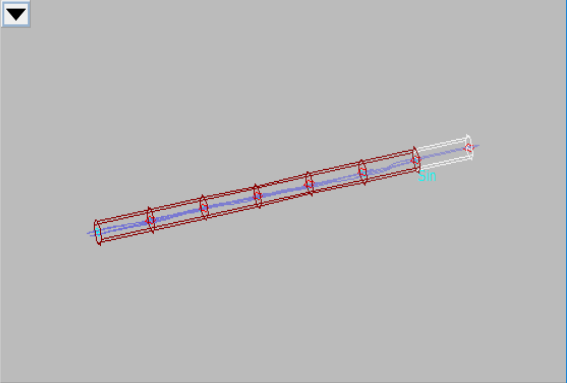
Name: Snake

Genotype: $X[\text{Sin}][[-1:0.891,=:0.834][[-1:-1][[-2:1]X[[-2:1,!:0.01][[-2:1,!:0.01]X[[-2:1,!:0.01][[-2:1,!:0.01]X[[-2:1,!:0.01][[-2:0.887,!:0.01]X[[-2:1,!:0.01][[-2:-2.729,!:0.01]X[[-1:3.077][[-3:1,1:-5.351][[-3:1,!:0.102]X[[-2:1,!:0.01][[-2:1,!:0.01]$

Info: (manually created)

Mutate

OK Cancel Apply



Evolved Genotype

Genotype data. Genotype

Genotype

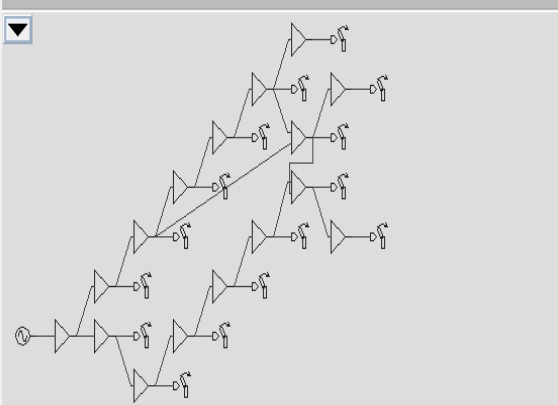
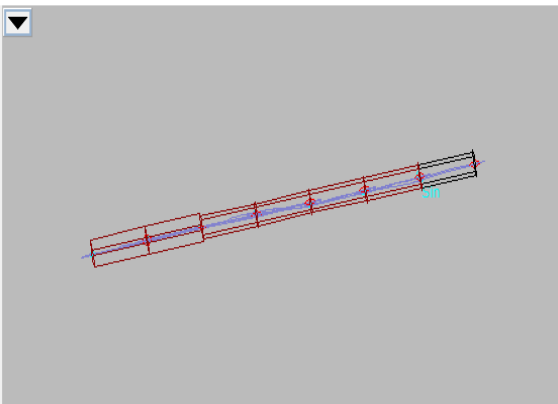
Name: Snake17

Genotype: $X[\text{Sin}][-1:0.891, =:0.834][|-1:-1][|-2:1]X[|-2:1, !:01, s:0][|-2:1.588, !:01]X[|-2:1, !:01][|-2:1, !:01]X[|-2:1.669, !:01][|-2:1.512, !:01]X[|-2:1, !:01][|-2:-4.538, !:01]RX[|-1:2.485][|-3:1, 1:-5.351][|-3:1, !:0.102, -9:1]RRX[|-2:1, !:01][|-2:3.348, !:01]$

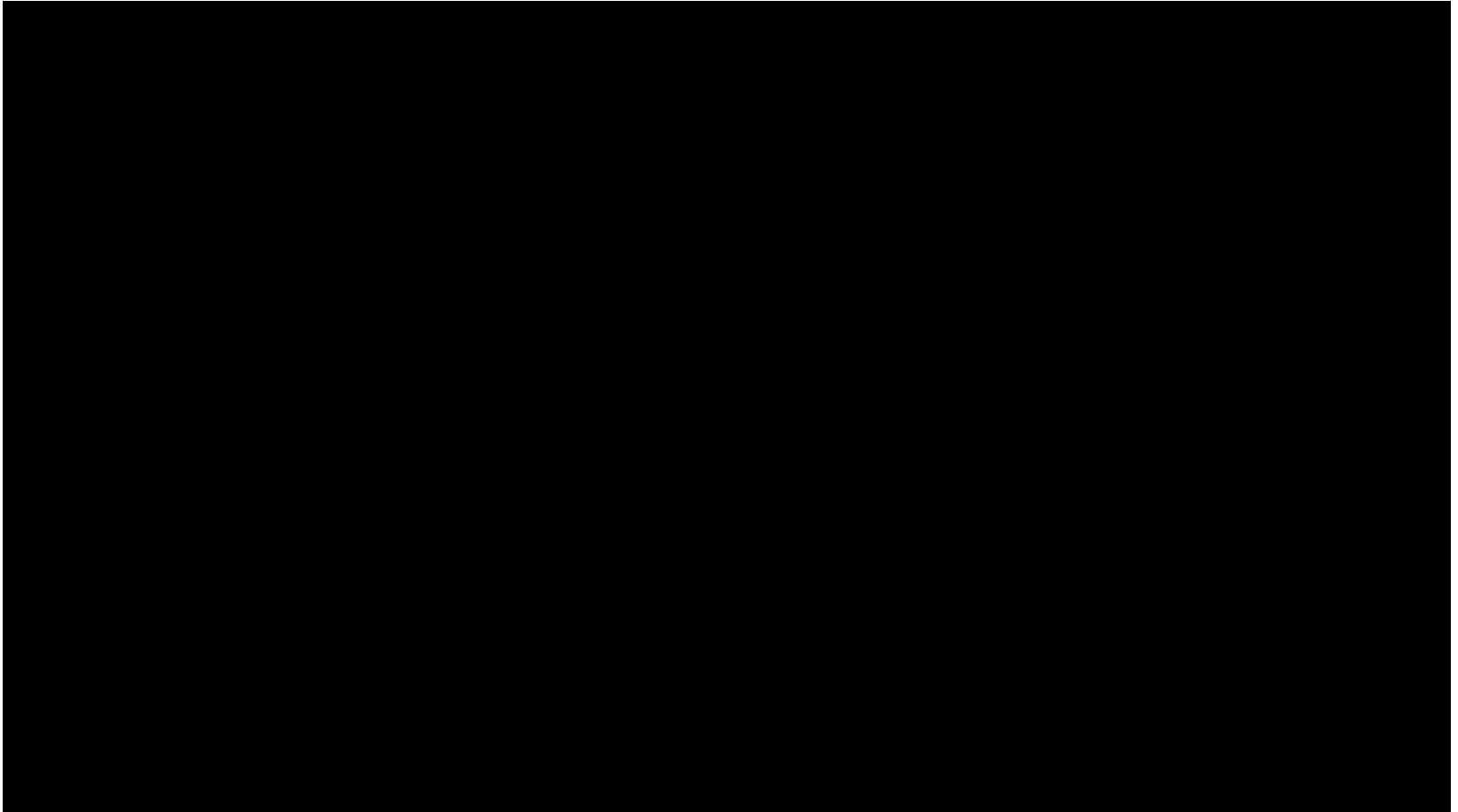
Info

Mutate

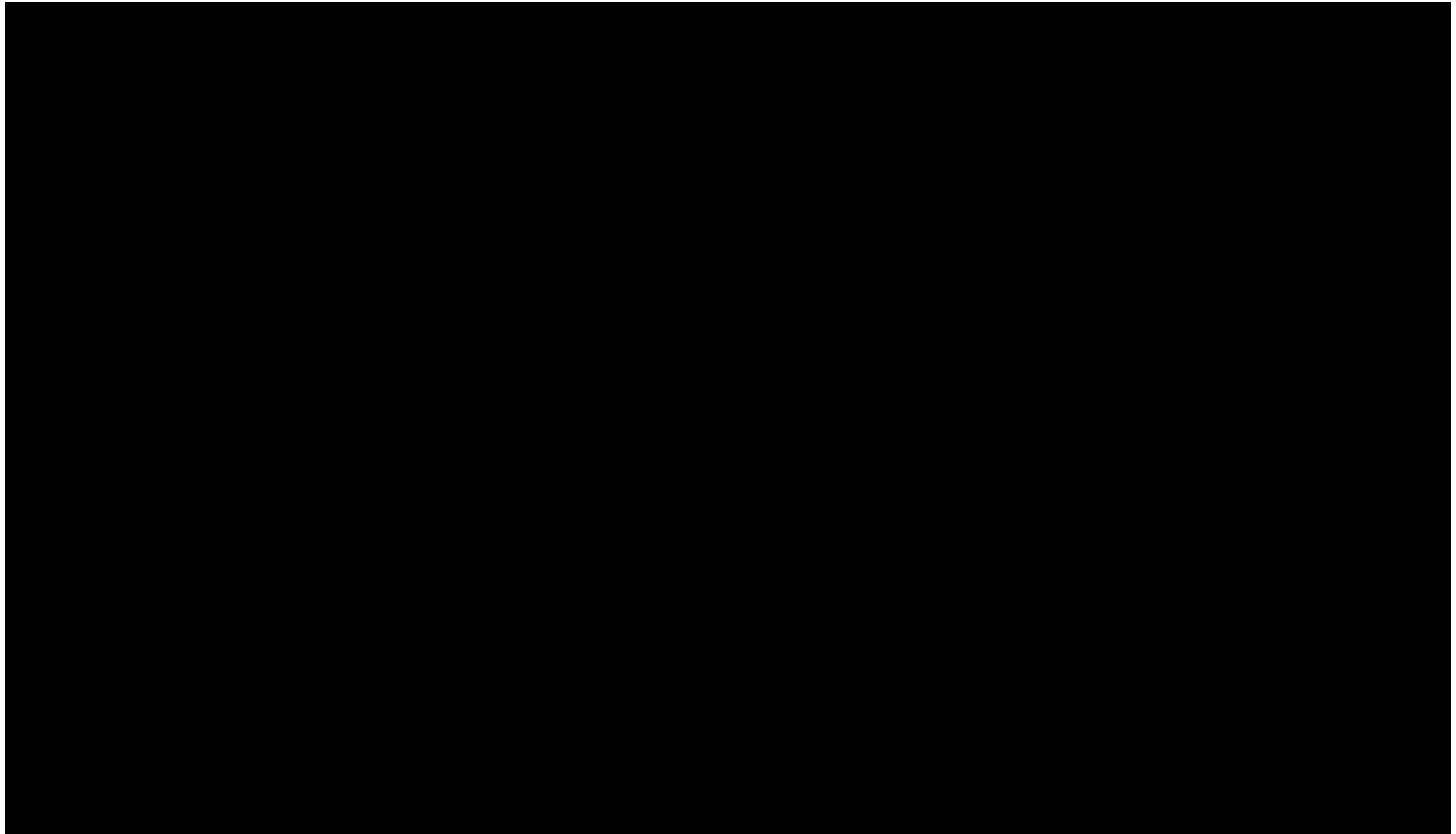
OK Cancel Apply



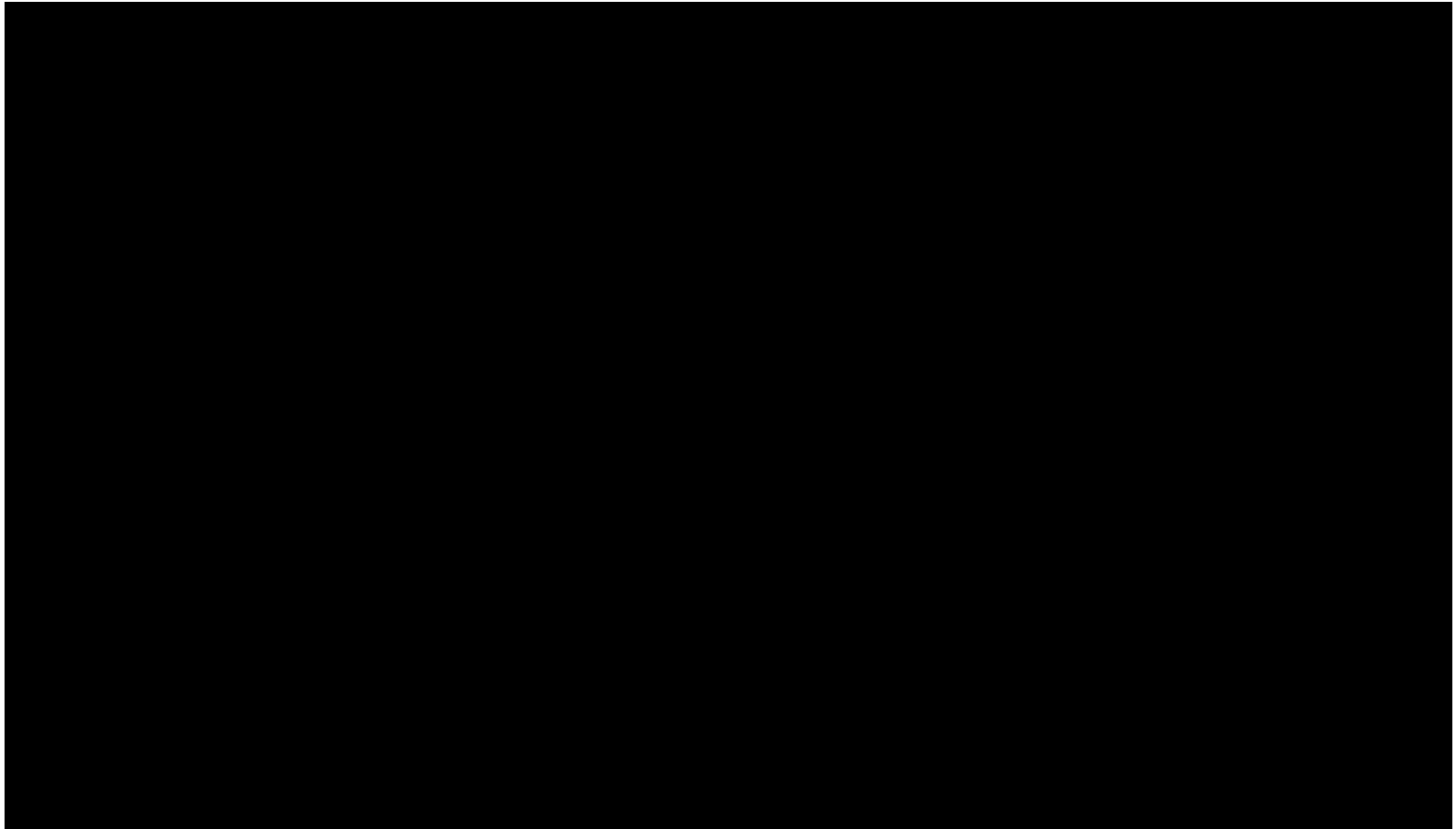
Locomotion – Slithering (Original)



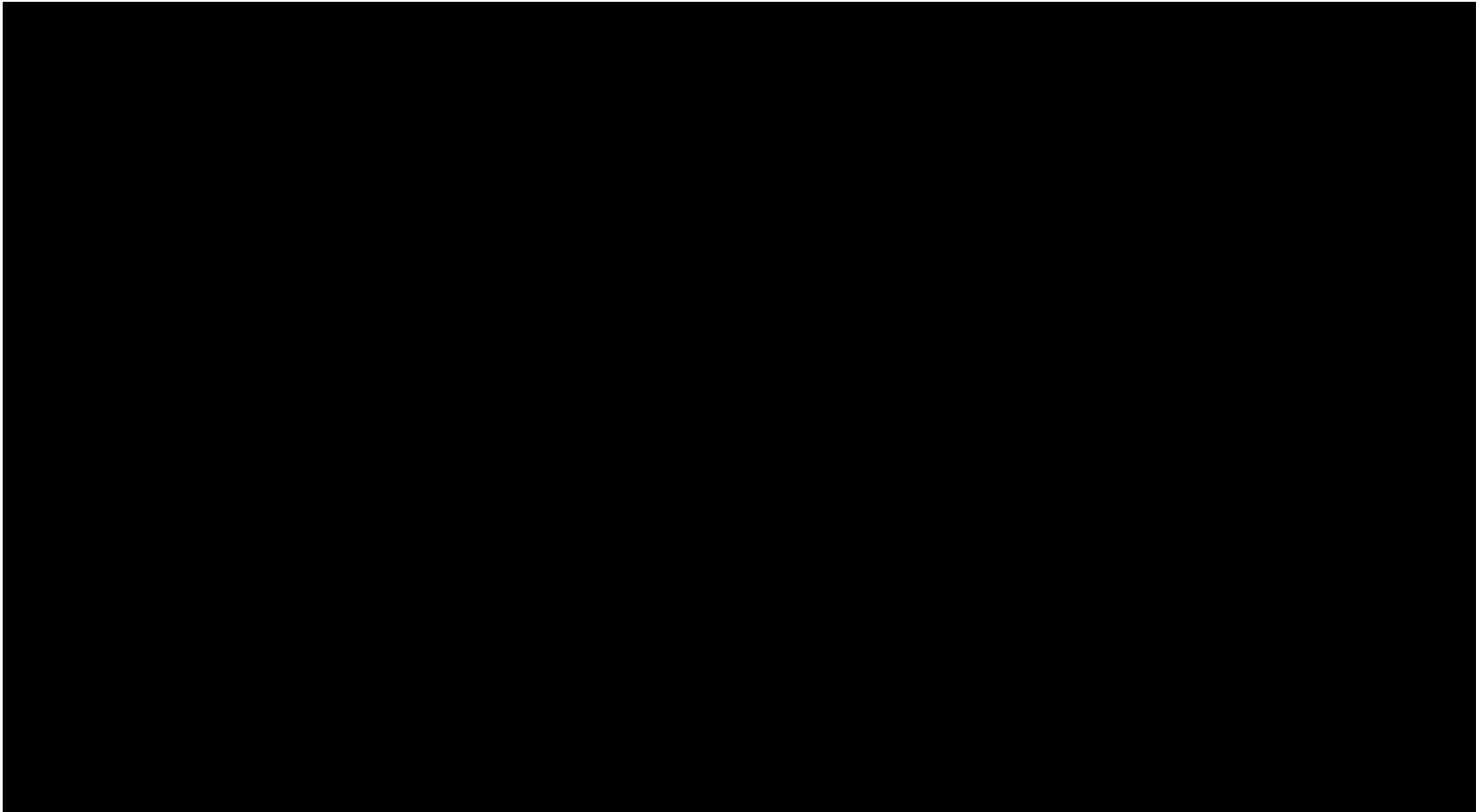
Locomotion – Slithering (Evolved)



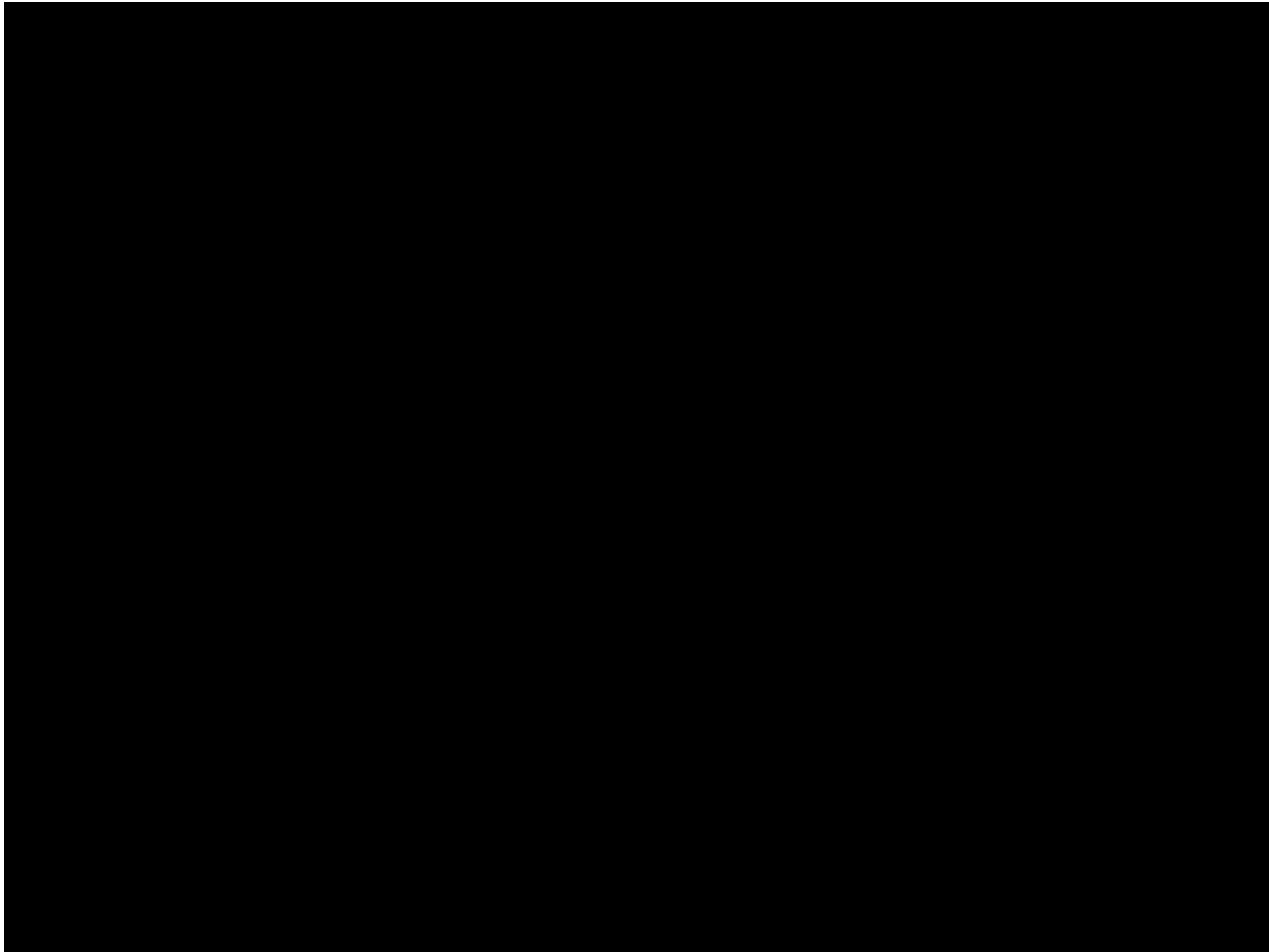
Food Finding (Original)



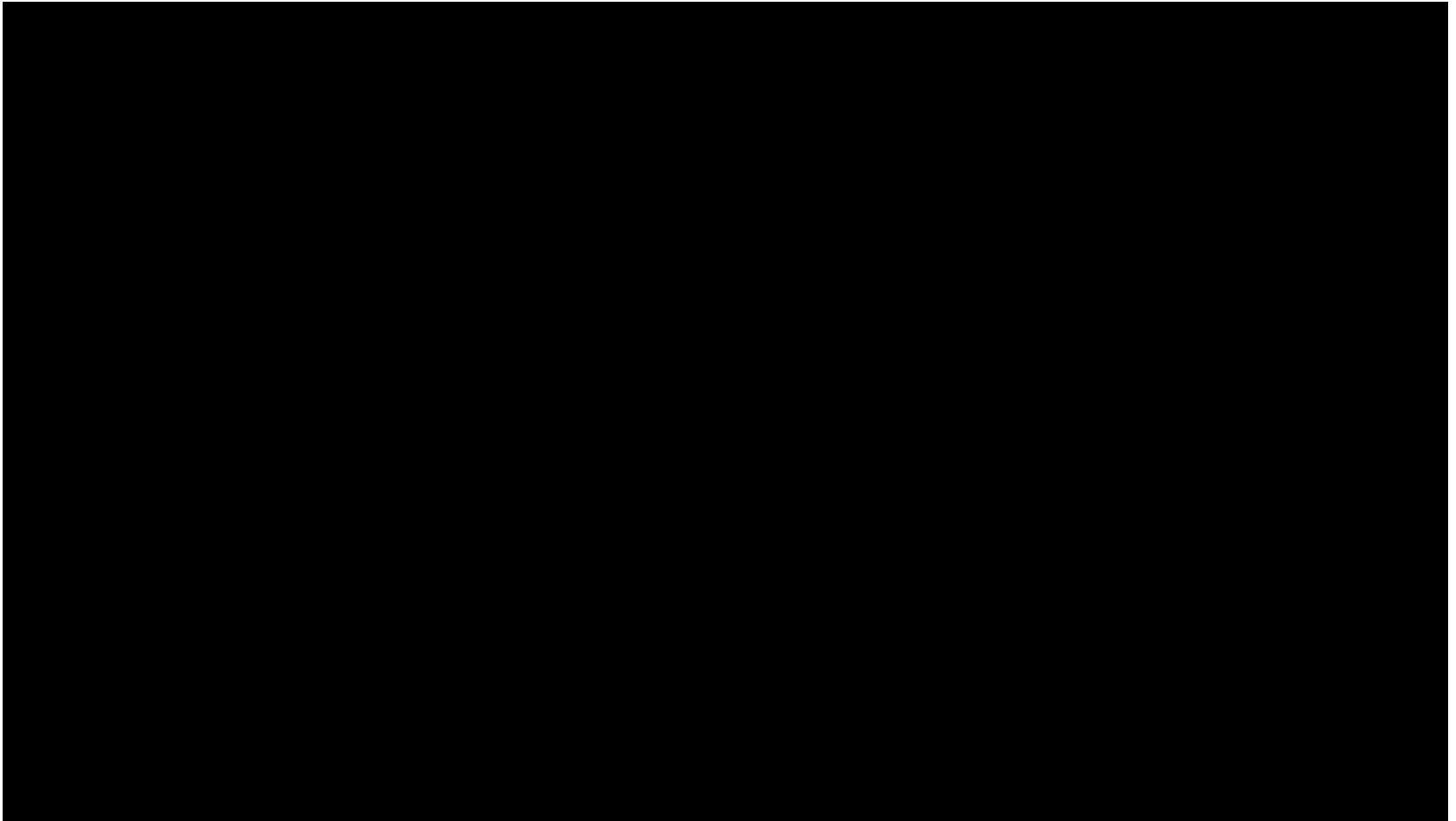
Food Finding (Evolved)



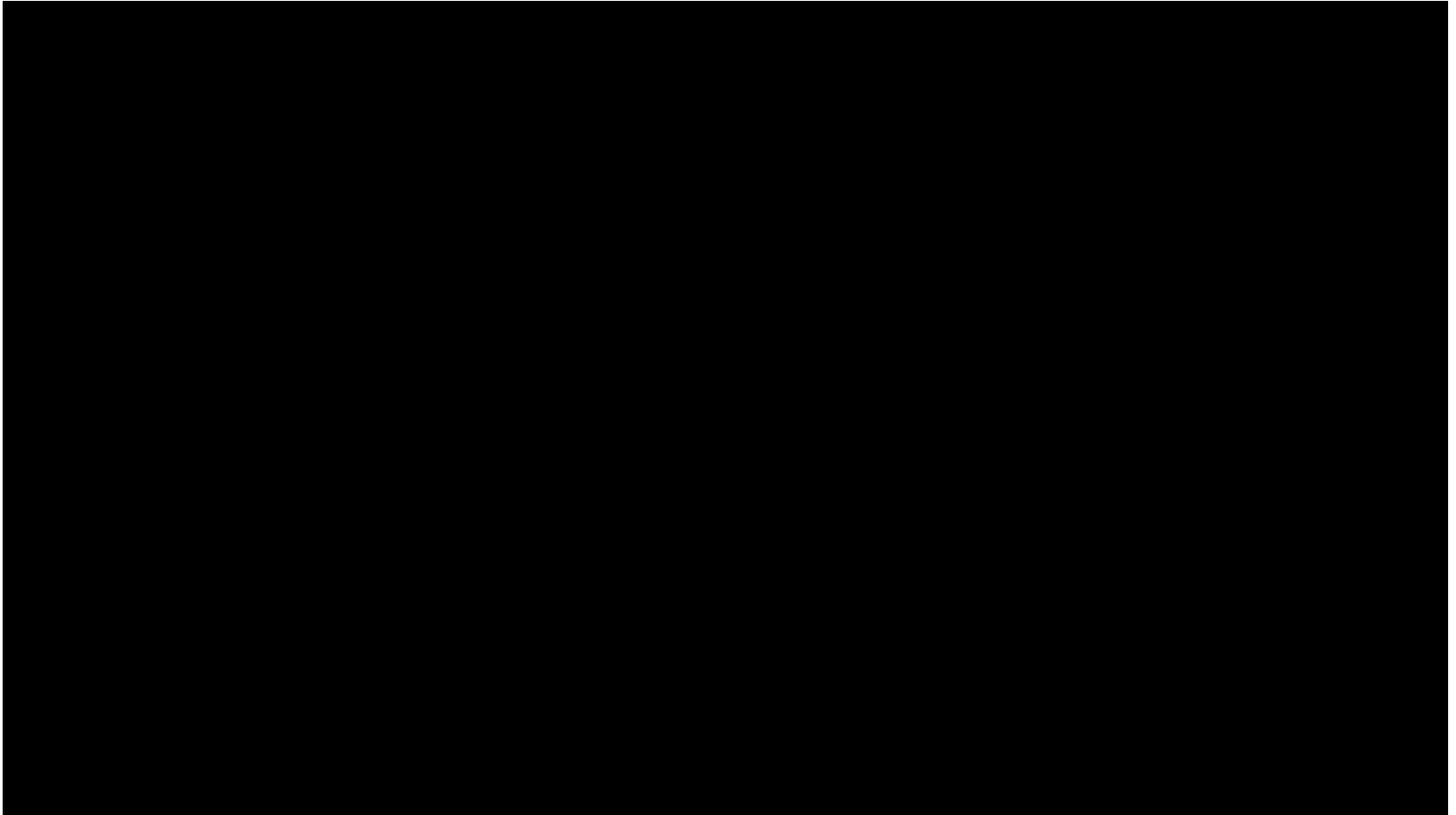
Locomotion – Swimming (Original)



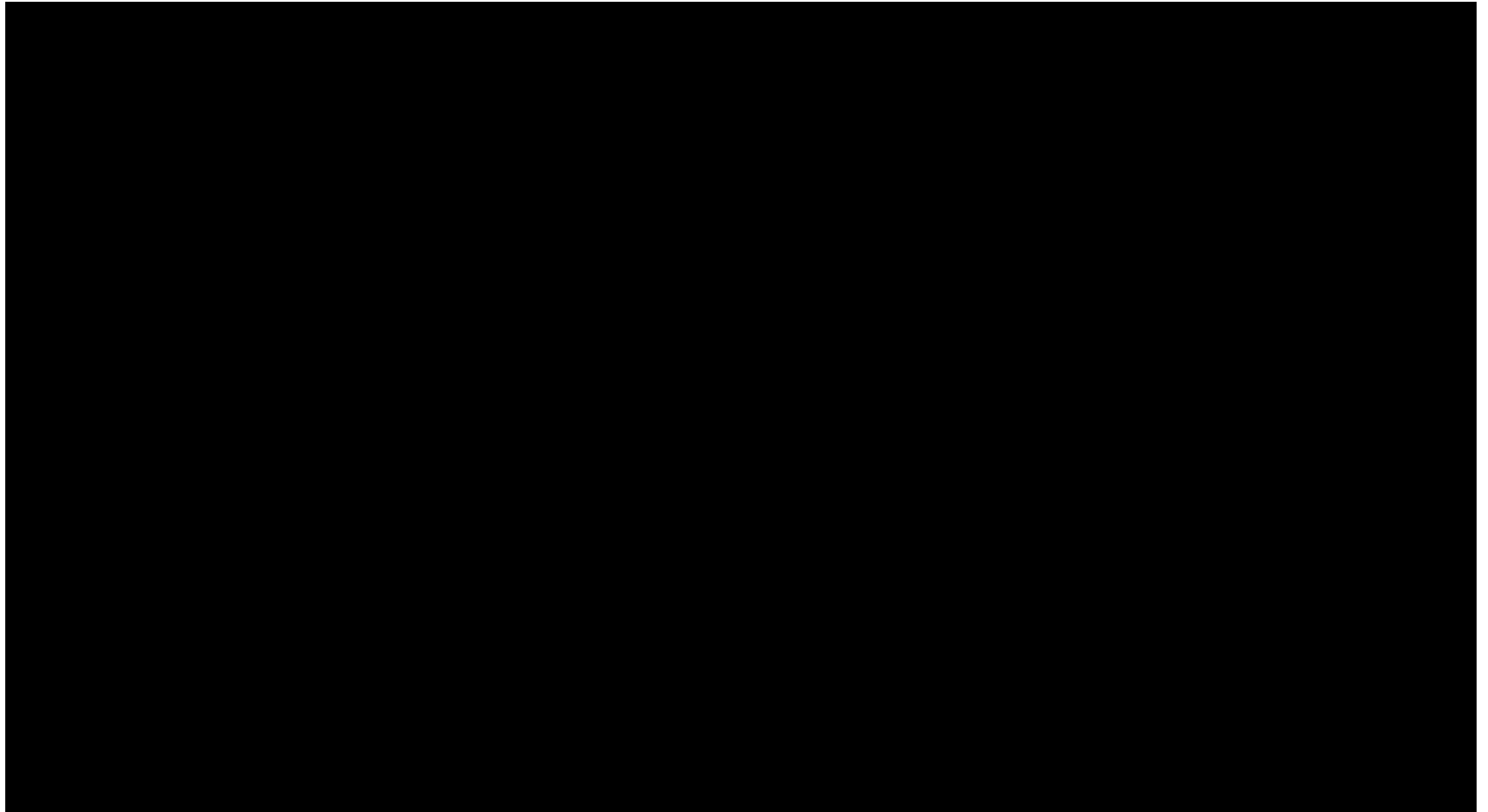
Locomotion – Swimming (Evolved)



Food Finding (Original)



Food Finding (Evolved)



Thank You!