



Bournemouth University



National Centre of Computer Animation

## Crowd Simulation based on Emergent Behaviours

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MSc Computer Animation and Visual Effects

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# Crowd in Films



# Crowd in Films

## Contributions

- Visually stunning
- Catch public's attention
- Enrich story
- The story may just need it

# Crowd in Films

## Contributions

- Visually stunning
- Catch public's attention
- Enrich story
- The story may just need it

## Issues

- Requires either real extra cast
- or more animators.
- Requires more time and money

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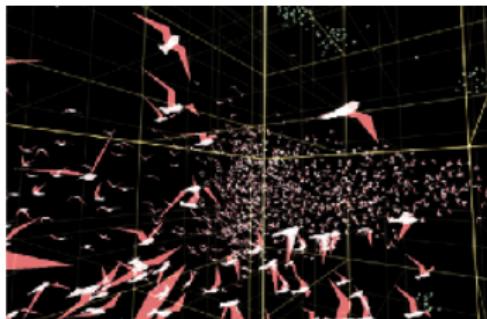
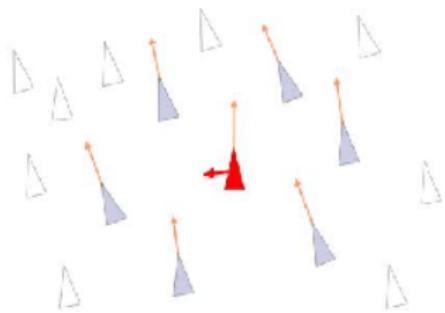
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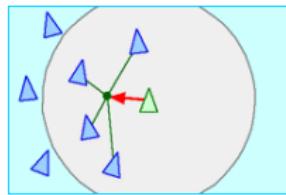
# Motion Planning from Crowd



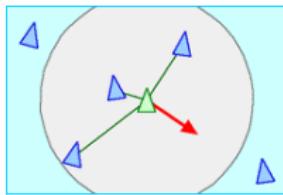
# Crowd Motion Simulation



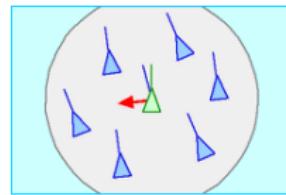
## C. Reynold's Flocking Model



Cohesion



Separation



Alignment

# MASSIVE Software



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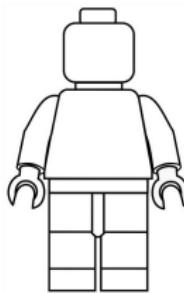
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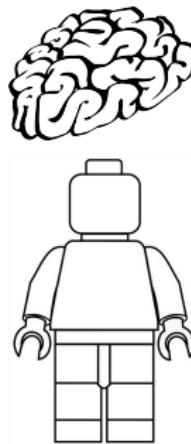
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# Agent



# Agent



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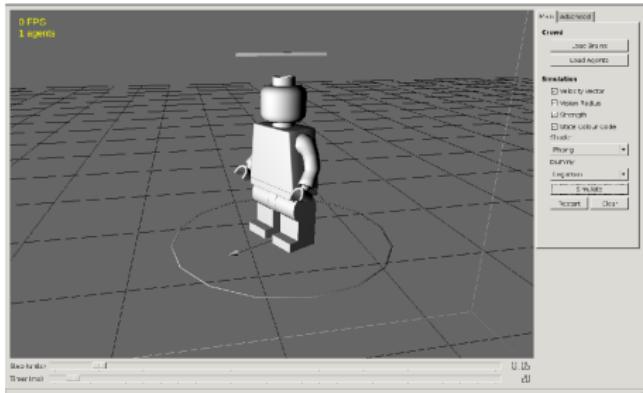
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# Agent Body

## Physical Properties

- Mass
- Strength
- Maximum Strength
- Velocity
- Maximum Speed
- Vision Radius



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# Agent Brain

## Behaviour

The brain receives information about the agent body, the environment and the interactions with other agents. After processing, it determines which actions the agent must perform.



# Agent Brain

## Behaviour

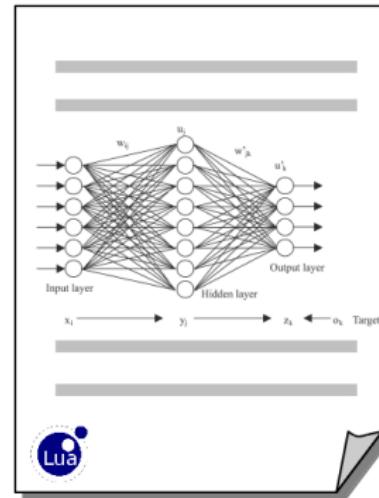
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# Agent Brain

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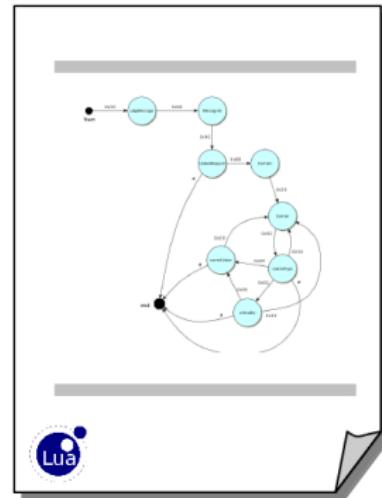
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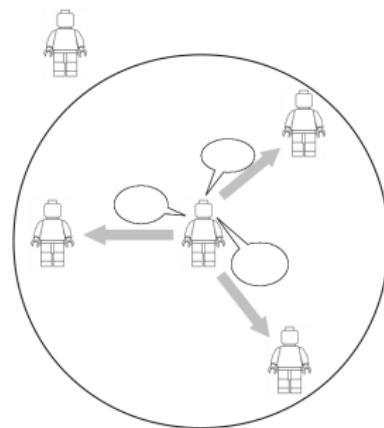
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# Interactions Among Agents

## Message

- Agent Identification
- Label
- Position
- Strength



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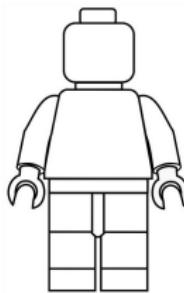
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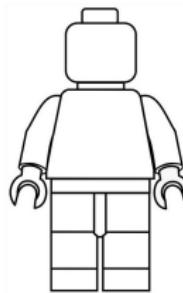
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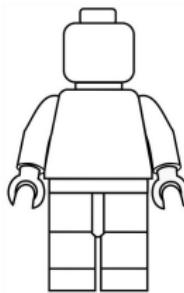
# Shooter Droid



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