# Texture Synthesis of Contrasting Natural Patterns

Supplementary Material

# Parameters

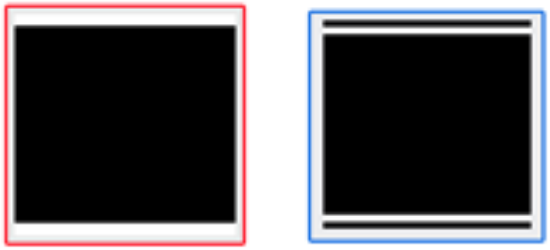
- ρ = number of relaxation events between two cells division process;
- Wr = repulsive radius;
- Time = days in the relaxation process;
- Wd = weighting factor for the displacements in the relaxation process;
- Mitosis = ratesof cell division;
- α = adhesion between two celltypes;
- Type Probability = number of cells is randomly placed on the domain.

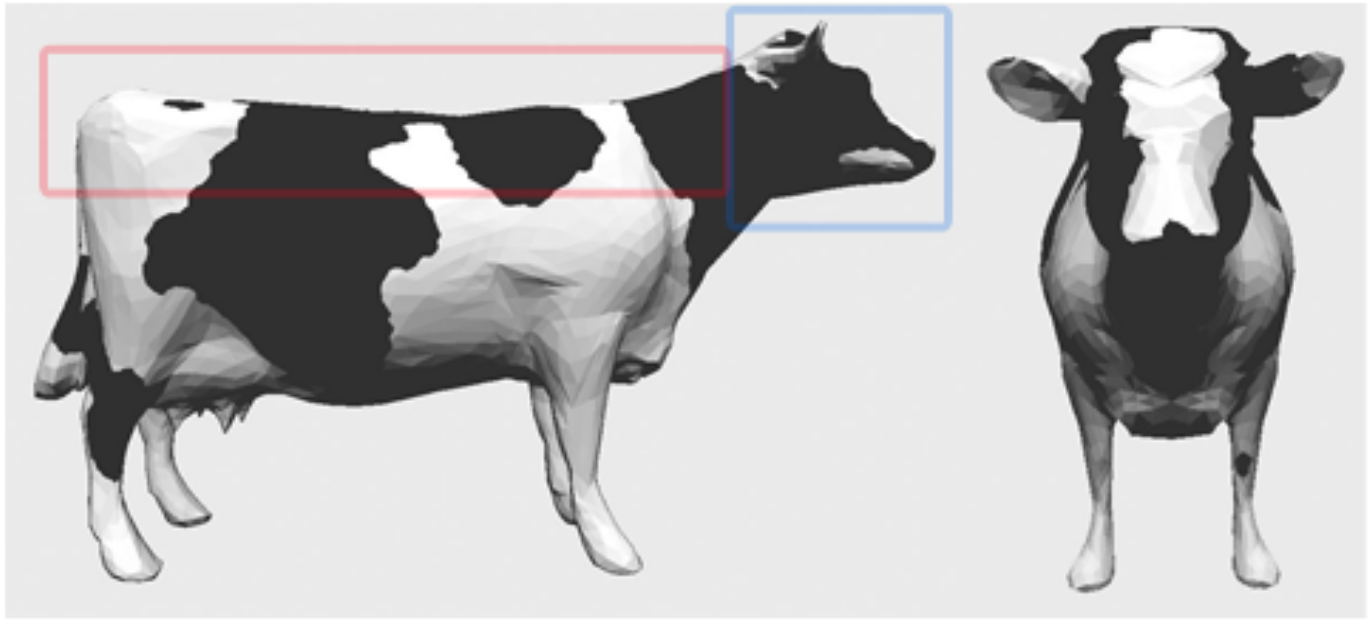
# Observations

- All results were obtained using the neural crest and cell migration model.

- Some results were obtained using local parameters definitions.

# Irregular Pattern – Hosltein Cow

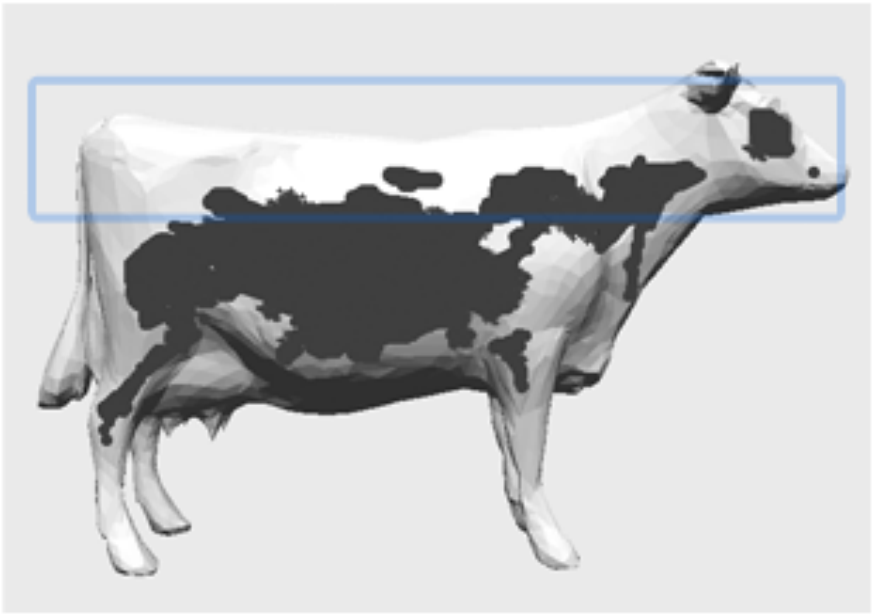




# Irregular Pattern – Hosltein Cow - Parameters

| Surface Area | ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|---|
| Head | 20 | 10.0 | 40.0 | 0.067 | 15.0 | 60.0 | 0.8 | 0.5 | 100%(F) 0% (B) |
| Others | 20 | 10.0 | 40.0 | 0.067 | 15.0 | 60.0 | 0.8 | 0.5 | 100%(F) 0% (B) |

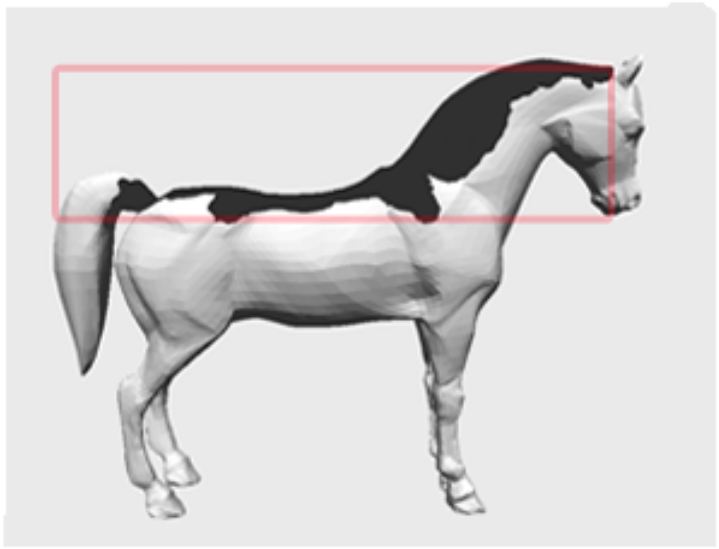
# Irregular Pattern – Randal Cow

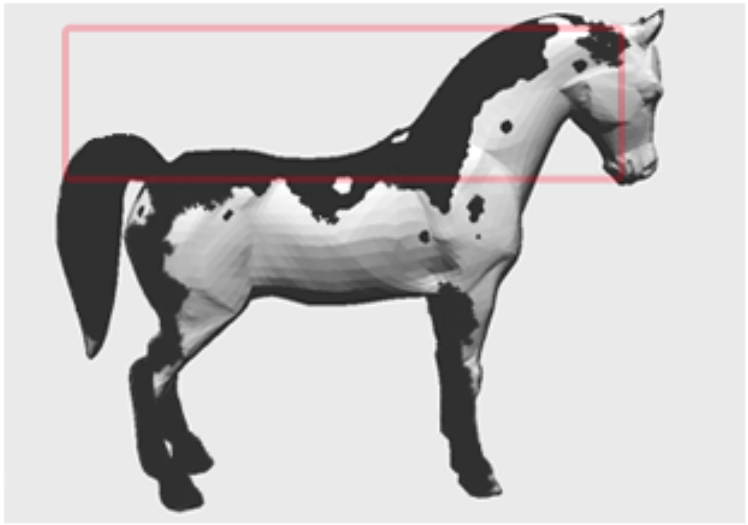


# Irregular Pattern – Randal Cow - Parameters

| ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|
| 20.0 | 6.0 | 30.0 | 0.067 | 15.0 | 60.0 | 0.9 | 0.5 | 70%(F)<br>30% (B) |

# Irregular Pattern – Overo Horse

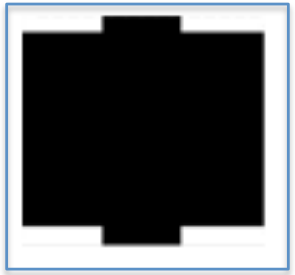


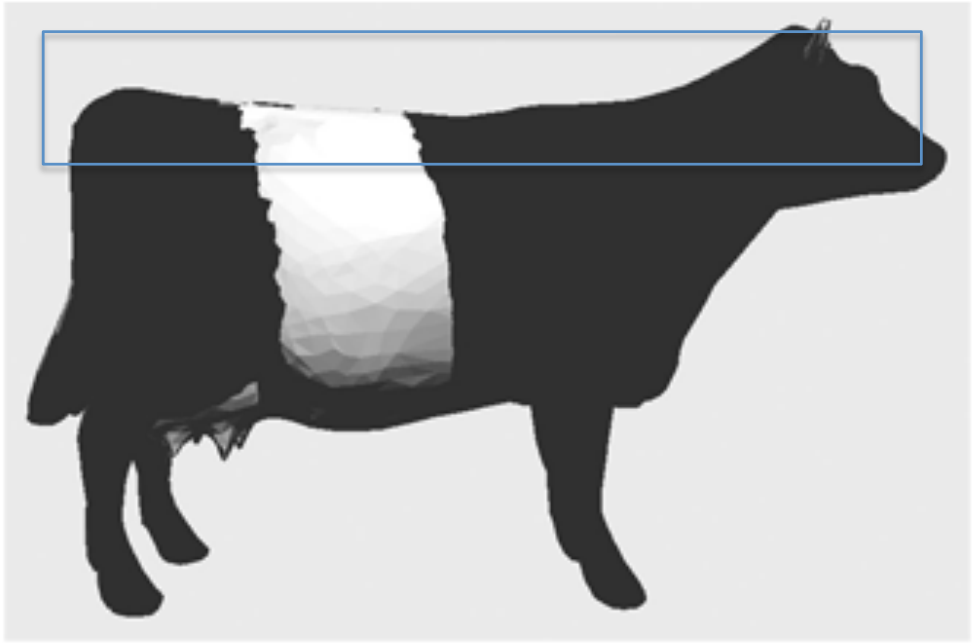


# Irregular Pattern – Overo Horse - Parameters

| | ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|---|
| Overo Horse 1 | 20 | 10.0 | 10.0 | 0.067 | 10.0 | 50.0 | 0.5 | 0.9 | 100%(F) 0% (B) |
| Overo Horse 2 | 20 | 6.0 | 10.0 | 0.067 | 10.0 | 50.0 | 0.9 | 0.5 | 100%(F) 0% (B) |

# Regular Pattern – Belted Cow

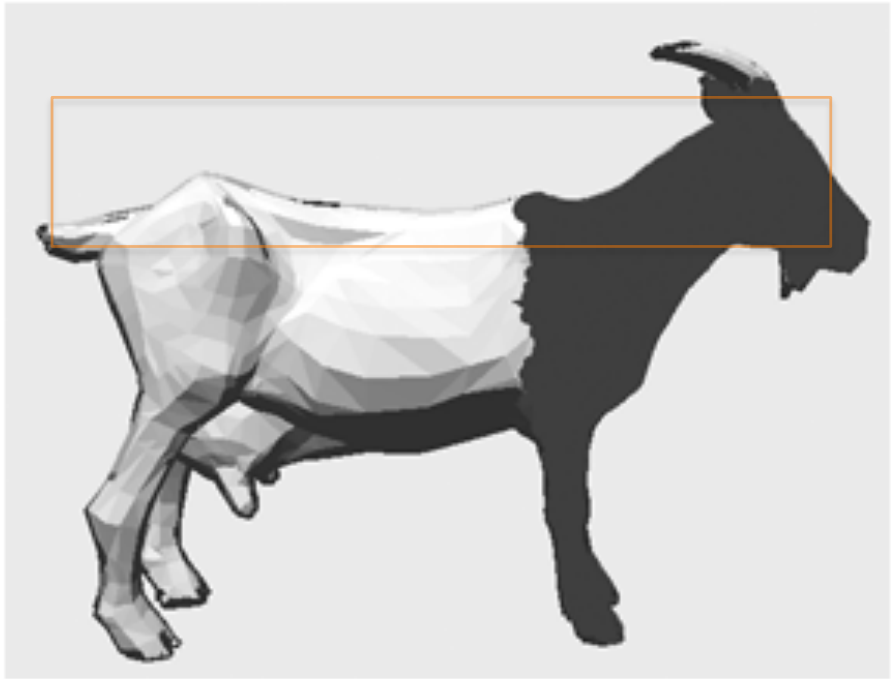




# Irregular Pattern – Belted Cow-Parameters

| Surface Area | ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|---|
| Head | 18 | 2.0 | 50.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.9 | 100%(F) 0% (B) |
| Others | 18 | 6.0 | 50.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.9 | 100%(F) 0% (B) |

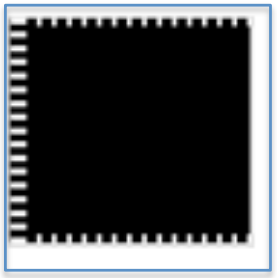
# Regular Pattern – Goat

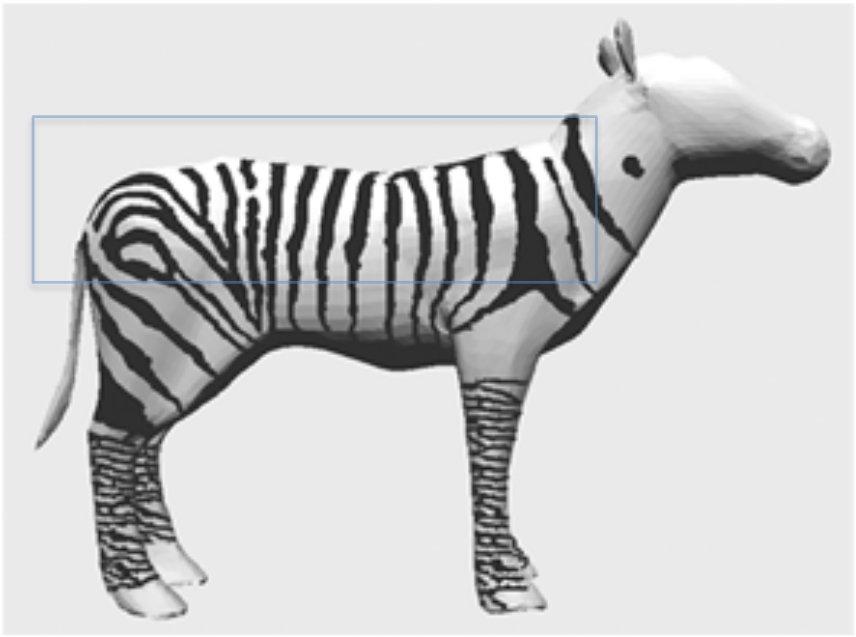


# Regular Pattern – Goat - Parameters

| ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|
| 20.0 | 2.0 | 40.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.9 | 100%(F)<br>0% (B) |

# Regular Pattern – Zebra



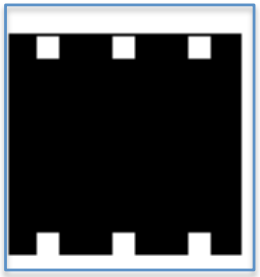


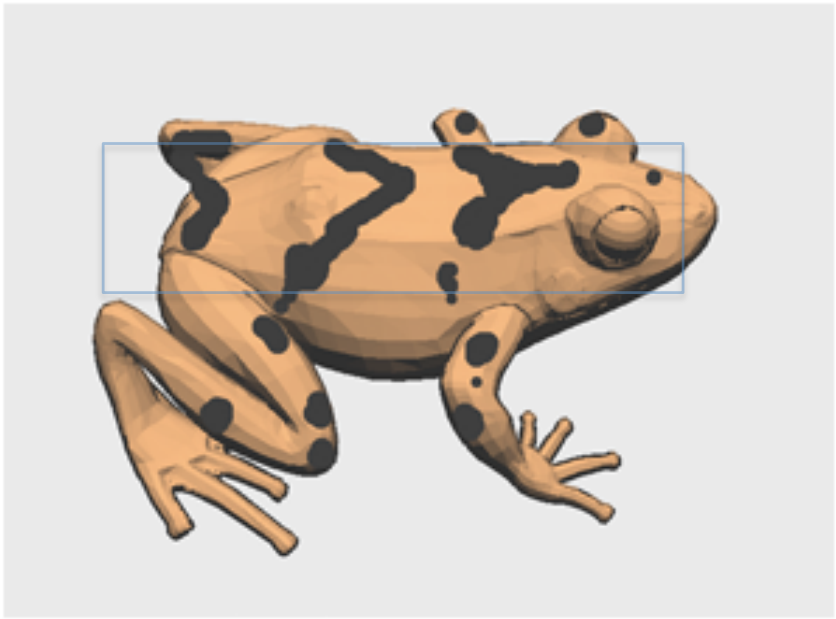
# Irregular Pattern – Zebra - Parameters

| Surface Area | ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|---|
| Legs | 18 | 1.0 | 40.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.5 | 100%(F)<br>0% (B) |
| Others | 18 | 3.0 | 50.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.9 | 100%(F)<br>0% (B) |

* Legs have a larger number of cells initially distributed than other parts of the body.

# Regular Pattern – Frog



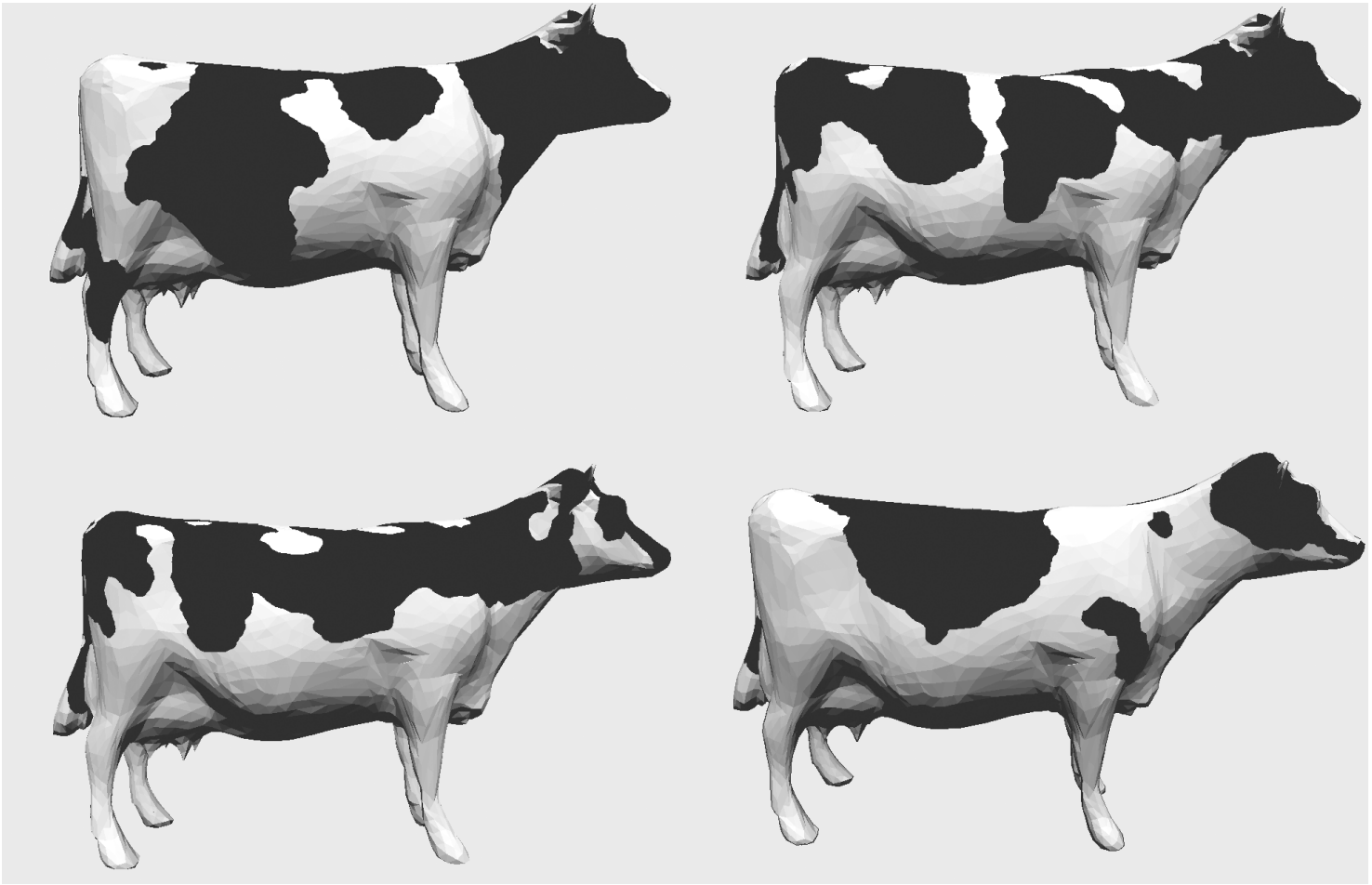


# Irregular Pattern – Frog - Parameters

| ρ | wr | Time | Wd | Mitosis F | Mitosis B | α FF | α BB | Type Probality |
|---|---|---|---|---|---|---|---|---|
| 20 | 2.0 | 30.0 | 0.067 | 10.0 | 60.0 | 0.9 | 0.9 | 100%(F)<br>0% (B) |

# Pattern variations

- Possible variations of individual patterns for Holstein cattle.



# Growth

- Cow growing example