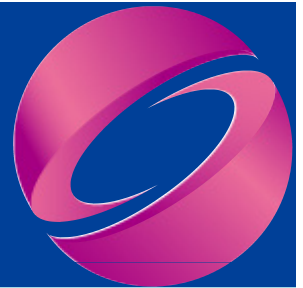


Daisuke Miyazaki, Saori Kagimoto, Masashi Baba, Naoki Asada,
"Creating digital model of origami crane through recognition of origami states from image sequence,"
ACM SIGGRAPH ASIA 2010 Posters,
pp. 19:1-19:1, 2010.12

Creating Digital Model of Origami Crane through Recognition of Origami States from Image Sequence

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Background

Message
Hope for world peace
Real

Our System

Message
Hope for world peace
Virtual

Origami States

State 1 State 2 State 3
State 4 State 5 State 6
State 7 State 8 State 9
State 10 State 11 State 12
State 13

Origami States

State 1 State 2 State 3
State 4 State 5 State 6
State 7 State 8 State 9
State 10 State 11 State 12-13

State Transition

State 2 State 3 State 5
State 4
State 6
State 7
State 8
State 9
State 10
State 11
State 12
State 13

Preprocessing

Original Background subtraction Skin region removal

Matched Chosen

State Recognition

Transition probability

20% 30% 10%

2D area size

Large Small

Silhouette shape

Difference

State recognition

Orientation Recognition

Transition probability

4 possible patterns

Binary edge

Texture color

Orientation recognition

Initial state

Setup

Camera
Working space

Result

Original
Our system
Texture mapped origami
Actual origami

Discussion

80% for fully textured origami
40% for less textured origami

No difference

Conclusion

Digitally capturing the origami crane folded by the users

- The user will put their hope for world peace on origami crane while folding it and while writing the message
- The user do not need to touch the computer during the folding process

[Less texture] Currently only detecting discretely at each state → Future work is to track each finger and origami tips and sides also during the state transition

[Uniqueness] Currently the unique origami can be made in photometric sense → Future work is to capture the geometrical shape of the folded origami to geometrically model the uniqueness of the exact origami the user made