

Sketch-based Modeling with Few Strokes

Cherlin, J.J., Samavati, F., Sousa, M.C.,
Jorge, J.A.

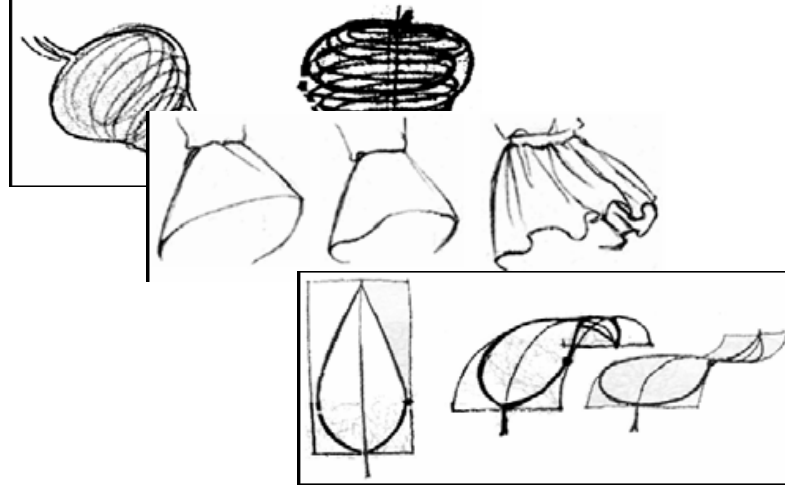
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Presented by Andy Tjong

Intro

- A sketch-based system for the interactive modeling of a variety of free-form 3D objects using a few strokes.
- Uses two parametric surfaces for creation of models
- Uses orthogonal deformation and cross sectional oversketching for editing.

Traditional hand-drawn techniques



Previous work

- Three categories
 - Extrusion-based system like Sketch and Quick-Sketch
 - Blob editing systems like Teddy and BlobMaker
 - Reconstruction-based systems which are based on templates
- This system can generate a large variety of 3D parametric surface objects with curved and creased features with few strokes and simple interactions.

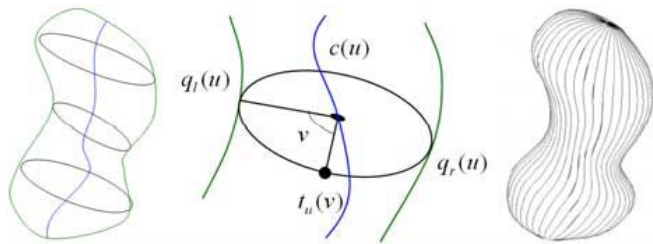
[The details of the system]

- Stroke Capture
 - Converted into parametric form
 - Use a B-Spline curve
 - Reverse Chaikin Subdivision
- Creation phase
- Editing phase

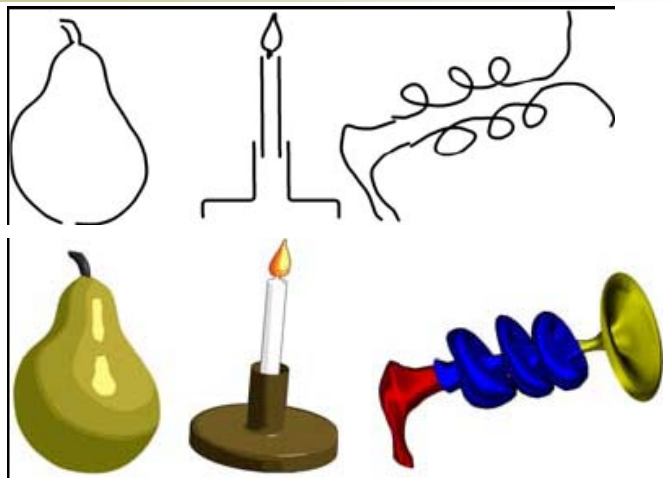
[The details of the system]

- Stroke Capture
- Creation phase
 - Rotational Blending Surface
 - Cross Sectional Blending Surfaces
- Editing phase

[Rotational blend surfaces]



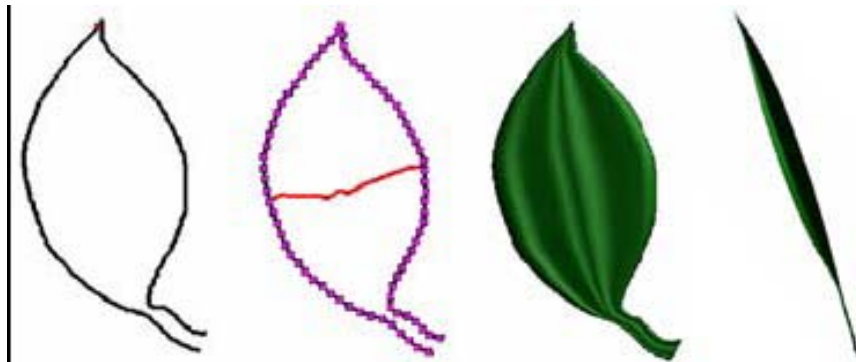
[Rotational blend surfaces]



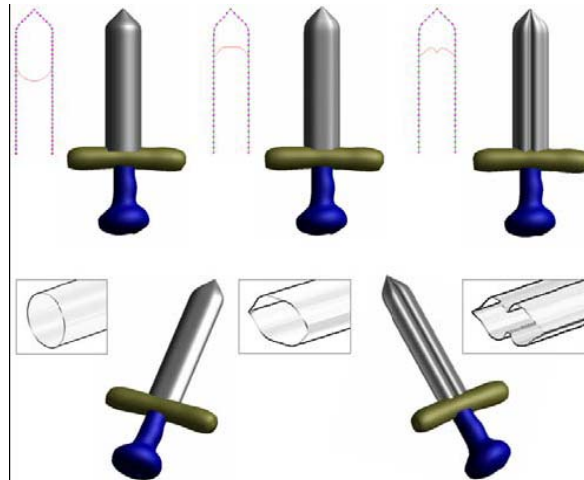
[The details of the system]

- Stroke Capture
- Creation phase
 - Rotational Blending Surface
 - Cross Sectional Blending Surfaces
 - Based on the scribble method
 - A curve used for creating the surface
- Editing phase

[Cross Sectional Blending Surfaces]



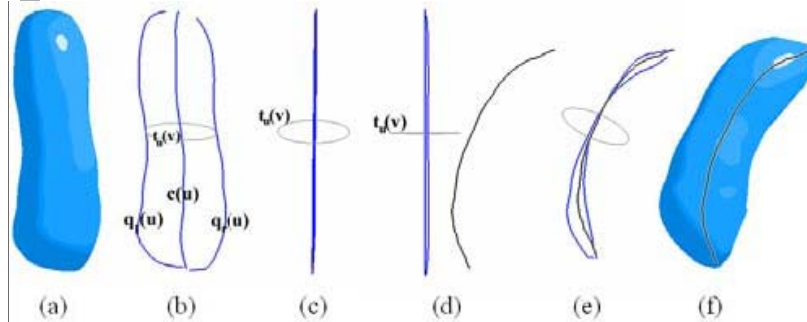
Cross Sectional Blending Surfaces



The details of the system

- Stroke Capture
- Creation phase
- Editing phase
 - Orthogonal Deformation Stroke for editing models in the third dimension

Orthogonal Deformation Stroke



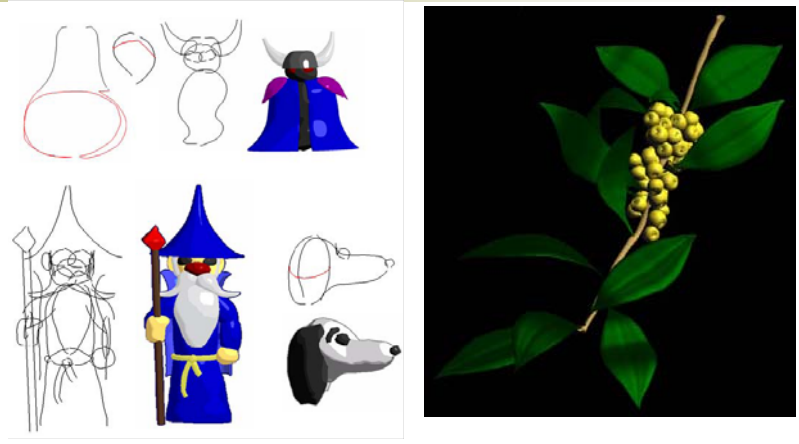
The details of the system

- Stroke Capture
- Creation phase
- Editing phase
 - Orthogonal Deformation Stroke for editing models in the third dimension
 - Cross Sectional Oversketch

[Cross Sectional Oversketch]



[Results]



[Pros & Cons]

- Pros

- Use only a couple of strokes.
- Easily create sharp edges and creases.

- Cons

- No user study, not sure if the system is really intuitive.
- Looks like translating and rotating is not so easy since the assembly takes a long time.
- Cannot rotate and twist objects since deformation only happens in the z direction.