1. Overview of the field

Pen, ink, brush, paint, chalk, potato stamps

western art and eastern art

1.1. Starting with Shoup's Superpaint

1973, first with color, tablet, stylus, scanner

1.2. Academic

1.2.1. Strassmann: Hairy Brushes

Seminal implementation of brush hair simulation

1996

1.2.2. Tunde Cockshott: Wet and Sticky

Accidents and Serendipity (David_England.pdf)

file:///home/boud/ref/painting/cockshott/Cockshott-Dissertation.pdf

1992

1.2.3. Curtis and Salesin: Computer Generated Watercolor

non-interactive

1997

1.2.4. Salisbury, Anderson, Barzel, Salesin: Interactive Pen and Ink Illustration

Taking the cross-hatching out of rendering with pen and ink

file:///home/boud/ref/painting/pen-and-ink.pdf

1.2.5. Clara Chan: Two Methods for Creating Chinese Painting

open source

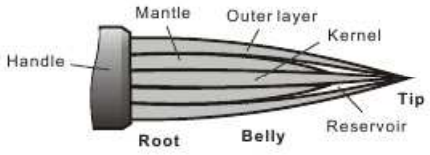
ported to Qt4

1.2.6. Chu and Tai: MoXi: Real Time Ink Dispersion in Absorbent Paper, An Efficient Brush Model for Physically-Based 3D Painting

2004

file:///home/boud/ref/painting/chinese/moxi.pdf

file:///home/boud/ref/painting/PG02.pdf



1.2.7. Bill Baxter: Dab, Impasto and Viscous Paint

2004

p

1.2.8. Tom van Laerhoven: Aquaverve and From Dust till Drawn

2006

gouache, acquarel, chalk and pastel

1.3. Commercial

1.3.1. Corel Painter

1.3.2. Art Rage

2. Free Software

2.1. Raph Levien's Wet Dream

/home/boud/ref/painting/brush-arch.html

2.2. Aleksey Nelipa: Gogh

2.3. Martin Reynold: MyPaint

2.4. Krita

3. Why?

3.1. Lumpers vs splitters

Style of working, building up vs discovering, constructiing vs serendipity:

3.2. Serendipity aided by complexity

Parameters not considered by pototo-stamp applications (even if they may have jitter, fade and other programmable features in their brush engines):

- Viscosity
- Mixability
- Time-based property modification on canvas
- Mixability
- Graininess
- Thickness, height
- Gravity (direction, strength)

4. Interesting Problems

4.1. Subtrate — Tool — Material

4.2. Colour Mixing

4.2.1. Fishkin: Pigmentary Mixture

file:///home/boud/ref/painting/color science in computer graphics Fishkin-Dissertation.pdf

4.2.2. Kubelka-Munk Model

See Emanuele's presentation

4.3. Real-Time physical filters

- Undo/Redo
- Rainwiper effect
- Interactivity

4.4. Painting is not two dimensional

thickness of material, thickness of canvas, shadows

4.5. Resolution

4.5.1. Berman, Bartell, Salesin: Multi-resolution painting

file:///home/boud/ref/painting/Berman.1994.MPA.pdf

pyramid approach

4.5.2. Velho, Perlin: B-Spline Wavelet Paint

unbouded, smooth, multi-resolution paint

5. Future

All the elements together:

- Substrate: extensible canvas representation with painterly channels in Krita
- Tool: support for pluggable devices: tablets, navigator
- Material: pluggable brush engines
- Interaction: physics engines (filters)
- Color: Emanuele Tamponi's color work