Technical Problems with Making a Moving Painting

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Introduction

'Animated painting' is an oxymoron, because animation, an image that changes over time, seems fundamentally opposed to painting, a hard image that is expected to remain constant over decades and centuries. This work is an attempt to synthesize these contradictory ideas into a novel form of artistic expression.

Paintings
- examine at leisure without missing anything
- viewed in contemplative mode
- ideal for complex static images

Animation
- current content needed for future interpretation
- ‘focused’ viewing mode
- use to explore an artist’s dynamic vision

Setup and Process
- acrylic paintings on stretched canvas, hung on a wall
- illumination provided by a data projector:
  - animated light pattern to make paintings move
  - simulated gallery lighting and cast shadows

1. create animation
2. project a single frame onto blank canvas
3. trace outlines onto canvas
4. paint each area with flat colours
5. identify areas that change colour during animation
6. adjust the animation

Colour Adjustment Algorithm

Light reflected from a painting at a point

\[
S(\lambda) \sum_i R_i \phi_i(\lambda)
\]

Colour perceived by the viewer

\[
X_j = \int S(\lambda) \sum_i R_i \phi_j(\lambda) \bar{x}_j(\lambda) d\lambda = \sum_i R_i M_{ij}(S)
\]

To make two areas with different spectral reflectances look the same, solve linear equation:

\[
\sum_i R_i' M_{ij}(S') = \sum_i R_i M_{ij}(S)
\]

- extensive calibration needed
- finite colour gamuts limit artist’s choice of paints
- \( M_{ij}(S) \) digonally dominant if colours are unsaturated

In practice
- colour can be achieved by a linear adjustment
- interactively change projected light using expressions in Side Effects Houdini
- match colours using ‘visual photometry’
- unsaturated paints allow for a wider colour range
- an artistic style with relatively uniform coloured areas reduces the requirement for colour adjustment

Other Issues

- enforce ‘display is a painting’ by gradual introduction of animation
- use soft edges since crisp paint lines can’t be hidden
- areas of rapid movement doesn’t need to be adjusted as accurately
- ‘black level’ is brighter than no light
- canvas not a perfect rectangle

Installation of Artwork

In the Still of Night in an exhibition at Waterloo

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