Introduction

What is NPR?

Any rendering style that does not try to create a photographic look is termed non-photorealistic, thus it's named Non-Photorealistic-Rendering.

Why NPR?

There are many advantages of non-photorealism depending on the purpose and "visual goal" such as:

- Facilitating the interpretive process: not depicting every details
- "Amplification by Simplification": concentration on main features
- Immersion in stories: more people can identify themselves
- Quick drafts: get impression of big picture without inspecting fine details

The applied areas include:

- Technical illustrations
    - Manuals, reports…
- Simulation of traditional artistic technique / painterly styles:
    - Creation of cartoons

The paper

Aim & Objectives

This paper demonstrates a system for drawing stroke-based NPR styles directly on 3D models:

The system gives artists the control over the look of a scene

View-dependant automatic adaptation of stroke numbers and placement

Related work and authors' contribution

From a recent survey we learn:

1. Much of the work on NPR addresses the production of still images
2. Some system for rendering 3D scenes have addressed the challenge of providing temporal coherence for animations

The authors' work

1. Addresses interactive rendering
2. Maintains temporal coherence

Basic Concepts

'Environment': Background colour/image & Base coat shader

Media Simulation: Overall impression of drawing, style dependent

Stroke: Colour, opacity, width, narrowing at endpoints, halo

Base path (Cutmull-Rom spline) with offset

Visibility through ID reference image

Rendered as triangle strip (optionally textured)

Focus on stroke-based rendering algorithms

Three main categories of strokes:

Silhouette & Creases: Basis of a drawing

Shows shape of object

Decal: Surface features

Hatching: Conveys light & tone from different density of one-colour pencil strokes

The following presentation will give you basic idea of the authors' system with how to draw strokes directly on 3D model and render the scene from new viewpoint, and also briefly introduce the algorithm behind.