Sketching stories from images of antique artworks

Figure 1: Examples of antique engraving from which animated virtual story could be generated.

1- Context and previous work

Antique statues and engraving in rocks are fascinating pieces of history which survived through time. They depict both shapes and ancient lifestyle as seen in Fig. 1 Although constrained to be engraved as a single static shape, these art works commonly illustrate living animated scenes, or can even sometimes be interpreted as a unique character depicted in different time periods. They therefore contain intrinsic visual information about animated story scenarios.

Generating 3D skeleton based character from 2D user inputs has been investigated for character posing [Tay00, GCR13] and character animation [MQW05, GRGC15]. On the other side, story narrative was explored using textual content [RS14, MCR16] or sequence of images [HFM+16]. On the archaeological aspect, attempts have been made to synthesize relief from line drawings [GIZ09] So far, no method is however able to synthesize a virtual animation from antique engraving inputs although. This project will thus enable the use of cartoon animation method to bring life to antique inputs.

2- Objectives

The goal of the internship will to propose "motion primitives" and annotations, for quickly sketching 3D animations from 2D images of ancient artworks. To simplify the process, we will review common strategies used in traditional storyboarding, and we will apply them to annotate temporal and spatial relations between image parts, and use them to create schematic 3D animations for the stories told in the artworks.

This will lead to a phd topic on animating stories from 3D reconstructions of antique artworks, such as statues and engravings.

In the work of Gingold *et al.* [GIZ09], a 3D model is created by placing primitives and annotations on the 2D image, based on commonly used sketching conventions. Similarly, we would like to propose a system for creating 3D animation by placing "motion primitives" and annotations on the 2D image, based on commonly used "storyboarding" conventions.

3- Requirements

We are looking for highly motivated candidates able to efficiently develop and experiment computer graphics and computer animation in a research context. Therefore, candidates should have a good background in computer programming, geometry, 3D modeling and animation.

4- Internship information

The internship will take place within the Inria Grenoble research center, in the Imagine research team, part of Laboratoire Jean Kuntzmann.

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