

PROJECT INTRODUCTION

Objectives

To design and apply computer graphics and imaging technology to develop an advanced 2D animation system for the media industry. The aim is to increase the creativity and productivity of artists by significantly reducing time and labour costs spent on frame drawing and painting.

Project Investigator / Manager

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Period of Project

Sep 2005 – Aug 2007

Website

www.ntu.edu.sg/camtech/cag

Challenges

A typical production for an animated feature film currently takes 2-4 years to complete, depending on the length and type of the animation film involved. Despite the immense progress in computer graphics technology, a lot of manual work is still required, especially on frame drawing and painting which represent approximately 60 percent of total labour. For example, the movie Lion King took two years to produce, requiring 170 animators to work on all the different animated sequences.

PROJECT DETAILS

Description

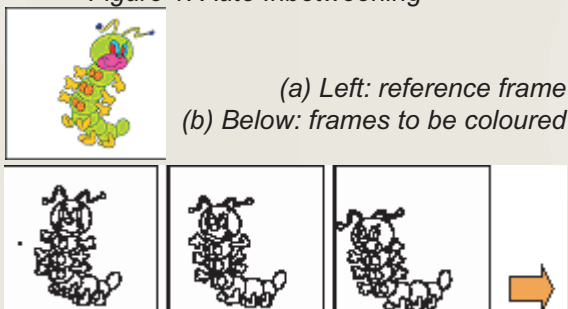
Given two key frames drawn by artists, the CACAni is able to automatically generate a user-specified number of inbetweens (Figure 2). It can also propagate colour information from a colour frame to its uncoloured successors in a sequence (Figure 3). The CACAni is applicable to various types of input frames, from line drawings to grayscale, from black and white to true colour pictures.



(a) two key frames

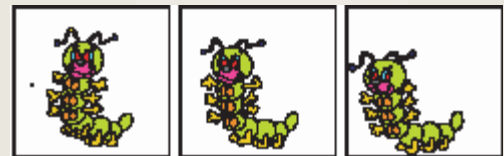


(b) three inbetweens generated
Figure 1. Auto Inbetweening



(a) Left: reference frame

(b) Below: frames to be coloured



(c) coloured results

Figure 2. Auto Coloring

Grid-enabled Approach and Benefits

A reasonable smooth effect of motion animation requires 25 frames per second. A 90-minute feature film requires 135,000 frames! In the case of four in-between frames for a pair of key frames, up to 27,000 keys need to be drawn manually by animators and the other 108,000 frames will be automatically generated. Under this circumstance, a significant amount of computing power is required to handle all interpolations in parallel.

By taking advantage of a large number of clusters and nodes over a Grid environment, CACAni has been able to significantly reduce production time and improve the quality of animation production, thus freeing artists from mundane jobs to concentrate on tasks that are more creative.