

Revolutionary Photo Software Turns Family Albums into Picasso Masterpieces

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The family portrait is set to become a great work of art thanks to new computer software that can turn photographs into cubist artworks in the style of Picasso. The Picasso-effect [software](#) is part of a unique suite of imaging technologies developed by computer scientists at the University of Bath that turns photo albums, videos and movies into drawings, paintings, and cartoons. The software could also revolutionise the way that [animations](#) are made.

In order to create the software, the researchers had to teach the computer how to pick out the elements of photographs that, until now, only humans have been able to recognise as important.

By giving the computer an 'aesthetic sense', Dr Peter Hall and Dr John Collomosse from the Department of Computer Science, were able to create a series of automated artworks with new effects, such as making a Picasso cubist-style picture from ordinary photos.

According to Dr Hall, the key to the new software is helping the computer recognise the important aspects of the photograph or film footage being used: "When humans draw or paint they distil all the vast detail a camera sees into a few lines or daubs of paint. We plug digital cameras into our computers and write software that 'looks' for the same kind of important things as humans do."

The researchers fed the computer a series of pictures where they had identified the aesthetically important elements, such as a nose, eye or mouth. Gradually the computer learned how to recognise these important elements and overlook the more obvious contrasts between edges or borders, which is the limit of what computers can do at the moment.





Using photographs of a subject taken from multiple points of view, the software automatically picks out important areas within the image, which are cut out as chunks. The chunks are statistically shuffled and a few of them randomly selected and distorted into a 'cubist' composition ready for digital painting, creating a new kind of automated art that was impossible before.

The new software could also revolutionise the slow and laborious way that animations, such as the BBC's Euro 2004 trailer and the arthouse film *Waking Life* (2001), are made.

Waking Life, which starred Ethan Hawke, was shot in its entirety on digital video. Digital animators then used conventional software to hand-paint the animation-key frames and use a computer to automatically work out what comes in-between.

In the Euro 2004 football competition graphics, football stars from throughout Europe were also painted into the action. This kind of hand-painting introduces flickering into animations.

By being able to understand what is in the video from an aesthetic point of view, the University of Bath software solves the problem by drawing animations accurately enough to prevent the flickering.

What's more, animators can use the software to paint frames in a much wider variety of styles, and even introduce special effects like those seen in Looney-Tune cartoons.

Examples of the automatically generated animations produced by the software can be viewed at: www.bath.ac.uk/pr/releases/picasso.htm and also on the research web pages.

Dr Collomosse, who developed the software for his PhD, said: “We have created a series of highly automated tools in our Video Paintbox which allow the animator to express their creativity but with a minimum of laborious manual work.”

Working with animator Dave Rowntree and his company Nanomation the group can take a conventional video and automatically insert streak-lines behind moving objects, make rigid objects bend and stretch as they move, and even caricature the way people walk.

Professional artists have judged the group's output to be of high aesthetic quality, and their academic peers recently awarded them several prizes.

For now, the software is still in development and will be limited to use by professional animators involved in the research, which is funded by the Engineering and Physical Sciences Research Council. However, there has been some interest from software and animation companies

and the team are keen to take these leads forward.

The original press release is available [here](#).

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