Automatic Photo Animation in Video and Still Images

(No. T4-1423)

Overview

Many currently marketed animation tools enable users to define objects and provide them with motion, yet none enable the fast and automatic, animation of a full body captured in a single still photo. A new technology developed by a group of researchers from the Weizmann Institute of Science, enables automatic transformation of figures from a single still image into vivid â€œ2.5Dâ€ animations, with the human characters on a given photo appearing as the playing actors. The new technology provides for â€˜one-touchâ€™ creation of complex animations with multiscale image geometry, and color and texture analysis of human characteristics. It is based on multiscale vectorization, in combination with human skeleton detection, provided by an off-the-shelf neural network, yielding compact, visually meaningful, and reliable image representation. This technology can be of high value in the development of interactive applications, automatic creation of animated slide-shows and as an easy-to-use tool for animators.

For an online demo please see: http://photo-animator.weizmann.ac.il/PhAn/index.php/image2movie/ [1]

Technology Essence

The live animation tool was constructed by a successful combination between â€œoff-the-shelfâ€ neural network-based algorithms serving as an image â€œskeletonâ€, together with fine-scale geometric description and multiscale vectorization of the image for accurate detection of body contours. The multiscale vectorization method is capable of detecting delicate features, such as different textures and colors, to an unprecedented degree of accuracy. In addition, to achieve an accurate description, the multiscale vectorization method requires only a small number of image parameters required for the accurate description as opposed to the number of pixels in the original image, resulting in a highly compressed vector representation. All of the above provide for an enhanced image description that combines high-level image understanding with fine-scale geometric texture and color details and accurate kinematic fittings in â€œ2.5Dâ€ models of human characters.

Advantages

- One-touch technology, not requiring any animation proficiency
- Captures all visually significant image patterns (geometric, color and texture)
- Compact algorithms
- Requires only a single image for animation
- No calibration or pose adjustments required
- High-accuracy detection of body contour and operation with a diversity of body postures
- Highly compressed vector representation of images

Development Status

Two patents were received for this technology and an initial demonstration of the technology is already available online. The group of researchers continues to develop this technology, to provide animation quality enhancement as well as to expand the body posture detection flexibility. The technology is expected to be easily implemented into 3D models in the future.

Patent Status

USA Granted: 9,070,207