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3D Worlds for Everyone! - New Technologies for 3D Content Creation

Virtual Environments are used for a diverse range of applications such as entertainment, education, e-commerce, training, urban design, architecture and archaeology. One obstacle restricting the use of virtual environments is the high cost (time and expertise) of creating content – especially for users without design and programming skills. We have developed two novel technologies assisting untrained users with this task. The “ClickWorld” technology allows the construction of 3D models using image sequences acquired by a low-cost handheld digital camera. In contrast to alternative technologies, such as laser scanners, structured lighting, and sets of calibrated cameras, our approach can be used by everyone having access to a consumer-level camera. The user only has to create a set of images or video stream from different view directions, input them into our algorithm, and a 3D model is returned. “LifeSketch” is a framework for rapid prototyping using sketched-based modelling and animation. The technology is most suitable for applications where an approximate representation is sufficient and a simple and intuitive modelling and animation process, suitable for untrained users, is more important than realism and extensive features. Examples are social networking applications and concept designs, e.g. for games and animations. We present the underlying mathematical concepts, discuss implementation issues, and present a range of evaluations and user study results.

