

Physically-based image editing on mobile devices

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Abstract

The increasing processing power of mobile devices such as smartphones and tablets, along with the touch and gesture-based user interaction they provide, make them very interesting platforms for exploring brand-new image editing tools with natural interfaces. We present two different applications that rely heavily on fluid dynamics solvers for simulating image formation. The first one allows the user to add liquid to a virtual lens. Then refraction of light through the modified optical system is calculated, obtaining interesting creative distortions from the source image. The second tool simulates the wet plate collodion process, the first mainstream photographic technique, very popular on the 19th century. In this application, the user starts mixing the chemicals for the collodion film, which is created by spreading the liquid over a plate. This plate is then exposed and developed for obtaining an accurate depiction of the final image. All the calculations are based on real measured data, ensuring a close match with the real process. These example applications make full use of the available resources, providing instant feedback for an organic and engaging user experience.