Next Level Consumer Devices for Virtual Production

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Recent work on intuitive Virtual Production technology at Filmakademie Baden-Württemberg [8] has focused on an open platform tied to existing film creation pipelines. The Virtual Production Editing Tools (VPET [7]) are published on Github [6] as a result of a former project on Virtual Production [2] funded by the European Union. This work supports Katana [4] as a central host and clients based on Unity technology [10]. A dedicated scene distribution process allows to maintain established (film) production pipelines and at the same time interactive editing by simply providing additional real-time optimized geometry. This reduces the effort during creation to simply providing additional low resolution geometry tagged with a special label. The remaining process is fully automated, no dedicated export procedures are required. Therefore, an established creation process can be maintained. Tablets were identified as the most suitable devices for onset interaction with virtual assets [3]. The Google Tango Platform [9] was of particular interest to allow positional tracking and the capability to explore a virtual scene by actively walking through it.

Figure 1: VPET client on consumer hardware with game pad controller

The work we present at CVMP 2017 covers the latest advancements in supporting the VPET clients with inside-out tracking through the Apple ARKit [1]. While past work with Tango Developer Kits assumed that this platform would be widely accepted, unfortunately up until today only two consumer products (Tango Phab 2 and Asus ZenFone AR) are supported. Therefore, an interesting achievement in supporting ARKit lies within the wide spread of devices enabled by simply upgrading to iOS version 11. As Virtual Production systems are usually custom build solutions for dedicated hard- and software, supporting ARKit further contributes to the democratisation of Virtual Production processes. The current version supports fully virtual scenes and uses the tracking capabilities to explore such. The next steps will be in augmenting the real world with virtual assets and utilizing the build in light estimation functionality to harmonize the real and virtual lighting.

Another major goal of the VPET development is to keep the interaction simple and intuitive. In this ongoing effort we also introduce a new, alternative interaction metaphor through a haptic input device. The GameVice [11] (Figure 1) is a gaming controller supporting the MFi Standard [5]. It has multiple buttons ergonomically arranged and additional analog joysticks on each side. Three versions support different form factors from smartphone to tablet size. First user evaluations have shown that in particular the analog joysticks are of great help when interacting with virtual objects.

The presented work intends to further democratize Virtual Production to become a reliable and easy to use tool in a wide area of media production. By supporting ARKit, millions of devices become suitable for previsualization and onset production. Hardware costs for such devices, including the gamepad mentioned earlier, are in the middle to upper three-digit range. Production evaluation has been and will be subject of further investigation at Filmakademie Baden-Württemberg and in close collaboration with our industry partners.

Figure 2: VPET clients propagating light changes to Katana host

The CVMP 2017 demo will cover the scene distribution from a Katana host, running on a Linux laptop (Figure 2), to two iPads including GameVice controllers. Updates are synchronized across the clients and host. ARKit tracking allows the exploration of the virtual scene.

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