Cloud Services for Automated Processing of 3D Full Body Scans

Yannick FRANCKEN, Stijn LIGOT
3D Body Cloud, Antwerpen, Belgium

Abstract

We present a cloud solution for automated processing of 3D full body scans. Manually processing 3D full body scans into producible or publishable products requires specialized knowledge, expensive software and a considerable amount of time. By automating these tasks and offering them as a scalable cloud service, the processing time as well as financial cost decreases tremendously. This means that in the same time span, a higher number of scans can be processed. Due to the increasing number of 3D full body scanners in the market and the quantity of scans they can produce per unit of time, we believe fast processing has become a necessity.

Our approach allows for offering scan to product conversion by a single API call, while being able to deal with different types scan data, product definitions and special requirements. We achieve this by building easily configurable modules and combine them into suitable pipelines for every specific situation. Modules are for example hollowing, fixing or thickening of meshes, automated rigging and skinning, creating 2.5D bas-reliefs, texture unwrapping, color corrections, rendering and many more. Final products, and hence available API calls, are for example branded videos of animated scans in a virtual world, digital 3D printable figurines standing on a personalized baseplate, a physically produced 2.5D smart-phone cover etc. Depending on the processing software of each module, certain hardware solutions are wishful or even required. In order to limit wasted computational power, we have opted for a flexible light-weight distributed processing approach. Each processing entity picks up tasks that are suited for the hardware it is running on. Processing entities are spread over commercially available cloud processing solutions and on premise single-board computers as well as servers with GPU power.

In the near future we will allow third parties to add new modules and let them monetize their efforts via the scan traffic we have. This will not only be technically challenging, but also from a privacy point of view to make sure we keep on being compliant with the General Data Protection Regulation.

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