From 3D Body Scan to Finished Product Without Pushing the Button

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Abstract

We present an approach that makes it possible to fully automate the process from 3D body scan to finished product. This process can be split into (a) the 3D scanning of the person and (b) the processing of the data into a finished product.

We start with focusing on the 3D data acquisition process. The main advantage of automating the 3D scanning is to avoid the need for a scanner operator, which reduces labor costs. This is particularly useful in situations where a fixed scanning booth is placed for a long term at a location where there are considerable peaks and valleys in the number of daily visitors (e.g. theme parks or museums). We achieve this automation by the use of pre-registered RFID wristbands. When a visitor enters the building or park, they receive a blank RFID wristband which they register at a terminal. The registration process collects all the needed data, such as the email address and preferred language for further communication. The visitor can then activate the scanner by simply tapping the wristband to an RFID reader connected to the scanner. Video and audio instructions in the correct language are then automatically played and the visitor is guided through the full scanning process without the need for an operator. It tells them how to behave, such as being correctly positioned, avoid wearing glasses, get hair tight etc.) in order to receive an optimal scan. The visitor will receive an email with a link to his / her 3D scan whenever the processing is ready.

When the data is captured and transformed into a raw digital 3D model, the data needs to be further processed into a finished product. Performing these tasks manually requires specialized knowledge, expensive software and a considerable amount of time. By automating and offering them as a scalable cloud service, the processing time decreases and the solution becomes more cost effective. 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 mesh fixing and thickening, creating a shell, creating 2.5D bas-reliefs, texture unwrapping, color corrections and 2D rendering. Final products are for example digital 3D printable figurines standing on a personalized baseplate, laser engraved 3D crystals, 2.5D wax stamps to seal envelopes and many more.

Keywords: 3D printing, Automated, Processing, 3D Full Body Scan, Cloud

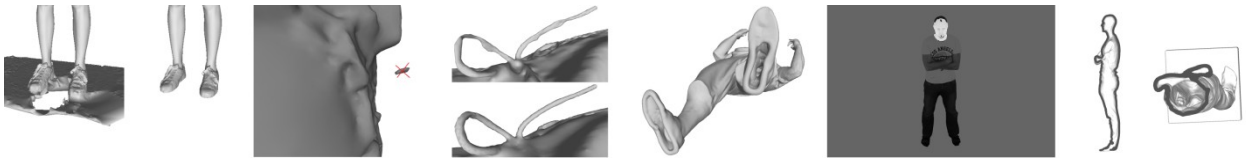

Figure 1: Selection of digital processing modules. From left to right: floor removal, clutter removal, thickening thin components, hollowing the solid mesh, rotating scan face forward and baseplate integration.