

## **Affordable Human Body Digitization Technologies and Processes for Body Sizing in the Fashion Industry: Methodology and Comparison**

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### **Abstract**

Human body digitization technologies (HBDT) are advanced tools to capture and reconstruct body shapes and dimensions. The process involves generating a 3D point cloud, refining it into an optimized mesh, and establishing the anatomical points for extracting digital anthropometric measures. Using affordable HBDT could increase the opportunities for fashion companies to acquire consumers' virtual bodies and measurements, thus allowing more efficient garment sizing, personalized design, prototyping, and manufacturing toward an on-demand fashion industry. The research is based on an initial literature review followed by an experimental activity by measuring 8 participants using traditional (tailor's tape) and digital tools (portable structured light 3D scanner and two camera-based smartphone apps) by expert and non-expert operators. The study compares measurement accuracy, evaluates technical opportunities and limitations, and explores the skills and workflows that fashion companies need to acquire to move toward a digital and green transition.

### **Keywords**

3D Body Scanning, Digital Fashion Design, Digital Avatar, Body Sizing, Digitization Technologies