

## **A Structured Framework for Virtual Drape Analysis**

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Virtual technologies, including three dimensional virtual draping of apparel, have impacted apparel processes considerably and will continue to influence future developments. Accurate analysis of drape in the virtual environment is challenging due to the complexity of capturing, processing, and evaluating three dimensional deformation of apparel. Further, drape depends on numerous factors such as fiber type, fabrics used to construct garments, yarn and fabric properties, and fabric finishing. Hence, a mechanism to bridge various components of drape analysis in the three dimensional virtual environment is needed.

The goal of this paper was to develop a framework for analysis of three dimensional virtual drape and to provide a route map for capturing, evaluating and characterizing drape in a virtual environment. The framework was based on a series of investigative steps and their contributions to virtual drape evaluation. The framework is divided into six categories and five segments signifying various components of drape analysis. The six categories are research segments, sample preparation, fabric objective testing, drape capture, drape parameters, and comparison and evaluation. The five segments are fabric drape, fabric drape with body scanner, garment drape with body scanner, fabric drape simulation, and garment drape simulation. The developed framework demonstrates the applicability of drape simulation, virtual prototyping, and virtual product development for apparel products.

The framework could be utilized as a business tool for decision making on aspects related to fabric and apparel drape. The framework can also assist the user in future development by examining the current tools and techniques used to characterize apparel drape in the virtual environment. Eventually, the use of virtual drape analysis to understand fabric/apparel drape could lead towards completely designing, developing, and demonstrating apparel products in the virtual environment.