3D Virtual Prototyping in Apparel Design

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• Three-dimensional (3D) virtual prototyping is visualization of garments and fabric drape on a 3D avatar.

• Using this technology, users can choose and modify garments, apply fabric properties, and test various garment-design modifications on a 3D fit model, or their personal avatar.
• 3D virtual prototyping minimizes lead times and costs of producing physical prototypes

• Provides flexibility and efficiency for product development among globally distributed teams of designers.

http://www.browzwear.com/products/v-stitcher/#2
• In the competitive global apparel industry, there is an increasing demand for professionals who are competent in using 3D virtual prototyping.

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Use in the Industry

- Adidas, Coach, Destination Maternity, Kohl’s, Lands’ End, Lee, Merrel, Nike, etc.
Focus of Research

• Identifying the usability and limitations of a new 2D/ 3D CAD software, Marvelous Designer, in virtual apparel prototyping.

• The possibility of importing 3D body scan avatars to the software.

• Preparing learning modules for design and merchandising courses based on the findings.
What is Marvelous Designer?

• Marvelous Designer is a program that allows one to take a garment from conception to the finishing touches in a 2-D/3-D environment with a 3-D avatar to observe fit of garment.
Nordic Skiing Racing Suit

Nordic Skiing Vest
Interface
Importing Avatars

- OBJ, Collada or STL files
- Match patterns to avatar
  - Trial and error
  - Adjusting import size percentage
  - Adjusting “shrinkage” value in MD of the pattern pieces
- Check importing axes
Importing Body Scanned Avatars
Importing Garment Patterns to MD via Adobe Illustrator and Optitex

- Convert Adobe Illustrator (ai) file to a PNG file
  - If beginning in Optitex, convert Optitex file to an ai file first
- Create a rectangular pattern piece and apply the PNG as a texture
- Trace desired size and delete rectangle when done
Creating a Garment
Finished Garment
Changing Fabric Properties
Marvelous Designer 3
Further Study

The ultimate goal of this study is to prepare learning modules as case studies to measure interests and willingness of:

a) apparel design and merchandising students to learn virtual prototyping, and

b) apparel design and merchandising educators to use this software in their courses

– Buffalo State University
– Buffalo State University (Examples)

http://fashiontech.wordpress.com/2012/05/17/clo3d-student-virtual-fashion-collection-projects/