Innovative Technologies in Fashion Retail Landscape – Bridging the Industry Trends, Pedagogical Advancements, and Research Agenda

Jihyun Kim-Vick, Ph.D., Kent State University, Kent, OH 44242, USA
Tunmin (Catherine) Jai, Texas Tech University, Lubbock, TX 79409, USA
Ruirui Zhang, Framingham State University, Framingham, MA 01701, USA
Ryan Teng, VP, CLO Virtual Fashion, Inc., Los Angeles, CA, USA
Vadim Rogovskiy, CEO, 3DLook, Inc., San Mateo, CA, USA
Hao Zhang, CSO, Dynimos & James Madison University, Harrisonburg, VA, 22807, USA

Keywords: Innovative technologies, fashion retail, industry trends, pedagogical advancements, special topic session

This abstract is a summary of the special topic session led by the first two authors on November 9, 2023.

The fashion retail industry has drastically changed its operation from concept to consumer, influenced by emerging technologies and the recent pandemic. This panel discussed the different types of key emerging technologies disrupting fashion retail. By bringing the first-hand industry panel's discussion to the ITAA members, we hope to reimagine what their digital or technological advancement in curriculums could be and to inform the community as to "best" practices now and in the future.

The first industry presenter, Ryan Teng, who is the Vice President at the CLO Virtual Fashion, Inc. provided examples of successful implementations and the future potential of 3D virtual fashion in product design and customer experience in retail. He demonstrated how 3D virtual avatar and virtual garments can be created and utilized in product presentations in mail-order catalogs (e.g., IKEA's online catalog) (Vice, 2020) and e-commerce web visual merchandising (e.g., underarmour.com).

The second industry presenter, Vadim Rogovskiy, who is the co-founder and CEO at the 3DLook, shared how personalized fashion creators in the industry can leverage artificial intelligence and 3D body scanning technology. The visualization technology at 3Dlook creates body measurements by processing and measuring the human body from only two photos taken by any mobile device (3DLook, Inc., 2023) and numeric data entry made by a consumer. The 3DLooks utilizes the computer vision algorithm and deep learning to analyze both photographic data and quantitative data provided by the users/consumers. The 3DLook operates its 3D body scanning lab collecting the 100+ data points on the human body and build ten body types, including trapezoid, oval, hourglass, athletic, pear, triangle, inverted-triangle, narrow rectangle,

rectangle, and wide rectangle (3DLook Technology, 2023). Then, using neural networks and proprietary statistical modeling based on the visual landmarks, body measurements generate synthetic data for the consumer, which can be used later to build a 3D model of the customer. The company works with several partners in the fashion industry, including BROWZWEAR, Gerber technology, CLO, Professional Clothing Industry Association Worldwide, and LVMH.

The third presenter, Ruirui Zhang, an Associate Professor at Framingham State University, shared the background of the inception of the Dynimos in collaboration with Dr. Hao Zhang at James Madison University, who is also serving as Chief Sustainability Officer at the company. She shared her insights on the application of emerging technologies in sustainable lifecycle assessment research and education. Dr. Zhang provided detailed pedagogy in how she utilized the carbon footprint data in her experiential learning class.

Lastly, the fourth presenter, Hao Zhang, Chief Sustainability Officer at Dynimos and an Associate Professor at James Madison University, shared his insights and background of the impact of digital technology on supply chain efficiency and transparency in fashion retail. Dynimos is a "data management platform tailored to trace, calculate, and report your business's carbon emissions" (Dynimos, 2023). Using their digital toolsets called, "Dynimos Carbon Accounting," one can estimate the carbon emissions of various products in an intuitive way (Dynimos, 2023). They also offer "carbon footprint calculator," which helps estimating the carbon footprint of products themselves along with the operations and services (Zhang, personal communication, 2023, November 9).

After the panel presentation, the audience exchanged opinions with the panelists about the interoperability issue of utilizing 3D technology, the strategies of promoting digital transformation in the fashion industry. Some potential future research and teaching topics were shared before we concluded the special topic session.

References
3DLook, Inc. (2023). *AI-powered 3D body measuring solution*. https://3dlook.ai/
CLO: 3D fashion design software. CLO Official Site. (n.d.). https://www.clo3d.com/en/
Dynimos. (2023). https://www.dynimos.com/#/
Vice, J., (2020). Ryan Teng from CLO discusses 3D technology in the fashion industry.
        https://www.depts.ttu.edu/hs/news/posts/2020/college/CLO-3D.php