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Accelerating Personalization Using Digital Tools to Drive Circular Fashion

Authors : Shamini Dhana, G. Subrahmanya VRK Rao

Abstract : The fashion industry is advancing towards a mindset of zero waste, personalization, creativity, and circularity. The trend of upcycling clothing and materials into personalized fashion is being demanded by the next generation. There is a need for a digital tool to accelerate the process towards mass customization. Dhana's D/Sphere fashion technology platform uses digital tools to accelerate upcycling. In essence, advanced fashion garments can be designed and developed via reuse, repurposing, recreating activities, and using existing fabric and circulating materials. The D/Sphere platform has the following objectives: to provide (1) An opportunity to develop modern fashion using existing, finished materials and clothing without chemicals or water consumption; (2) The potential for an everyday customer and designer to use the medium of fashion for creative expression; (3) A solution to address the global textile waste generated by pre- and post-consumer fashion; (4) A solution to reduce carbon emissions, water, and energy consumption with the participation of all stakeholders; (5) An opportunity for brands, manufacturers, retailers to work towards zero-waste designs and as an alternative revenue stream. Other benefits of this alternative approach include sustainability metrics, trend prediction, facilitation of disassembly and remanufacture deep learning, and hyperheuristics for high accuracy. A design tool for mass personalization and customization utilizing existing circulating materials and deadstock, targeted to fashion stakeholders will lower environmental costs, increase revenues through up to date upcycled apparel, produce less textile waste during the cut-sew-stitch process, and provide a real design solution for the end customer to be part of circular fashion. The broader impact of this technology will result in a different mindset to circular fashion, increase the value of the product through multiple life cycles, find alternatives towards zero waste, and reduce the textile waste that ends up in landfills. This technology platform will be of interest to brands and companies that have the responsibility to reduce their environmental impact and contribution to climate change as it pertains to the fashion and apparel industry. Today, over 70% of the $3 trillion fashion and apparel industry ends up in landfills. To this extent, the industry needs such alternative techniques to both address global textile waste as well as provide an opportunity to include all stakeholders and drive circular fashion with new personalized products. This type of modern systems thinking is currently being explored around the world by the private sector, organizations, research institutions, and governments. This technological innovation using digital tools has the potential to revolutionize the way we look at communication, capabilities, and collaborative opportunities amongst stakeholders in the development of new personalized and customized products, as well as its positive impacts on society, our environment, and global climate change.

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