Shape-Integrated Knitting For Circular Knitting Principles And Enhanced Zero Waste Fashion Design.

Master Thesis
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MSc. Integrated Product Design

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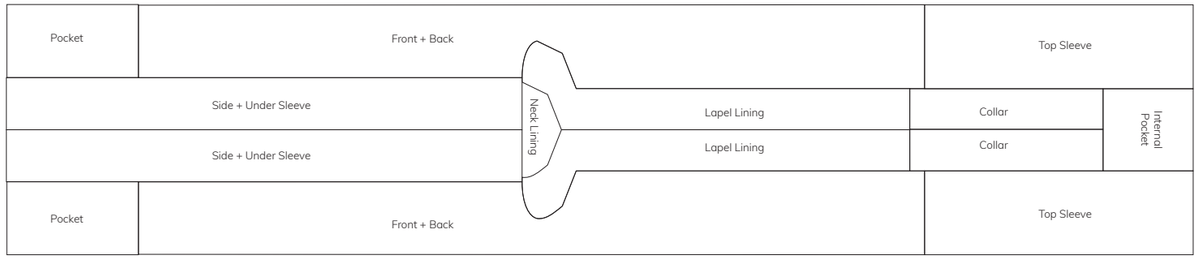

The fashion industry's significant global environmental impact, primarily driven by low-cost, high-volume production through wasteful and traditional manufacturing, necessitates sustainable alternatives that overcome limitations associated with current solutions, such as zero waste fashion design. This research investigated the potential of modern circular knitting techniques as a zero waste solution for garment production. Using an iterative Research through Design approach, this research developed a method for shaped circular knitting, integrating textile manufacturing and zero waste fashion design as a holistic process. By leveraging the inherent dimensional properties of knit structures, the research realised the versatile personalisation of garments without the need to redraw their pattern. The results demonstrate the feasibility of this approach based on the principles of existing large circular knitting machines by delivering a design toolkit and proof of concept through detailed designs and prototypes. These provide opportunities to eliminate pre-consumer cutting waste, simplify and reduce production, and improve garment design flexibility and personalisation.

Without Structure Mapping

With Structure Mapping