

RESEARCH THEME

XL cycle – a.y. 2024/2025

Title of the doctoral research	Design Practices for Human Technological Transition in the Textile-Knitwear Manufacturing Sector
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Abstract

We find ourselves in a challenging moment of big transitions: what was known and experienced about industrial production has been re-evaluated in light of the shift to Industry 4.0 (Longo et al., 2020), of digital transformation, and of the progressive fragmentation and complexity of knowledge.

The change impacted also the Italian textile-knitwear system, composed of a multitude of small and micro manufacturing companies where human creativity is the source of goods and services (Howkins, J. 2002). These businesses are based on a collaborative way of working and sharing cultural values, together with the persistent need of manual care and intervention: all elements that are hardly challenged by heavy digitalization and somehow serve as barriers to the digital shift. To prevent technologies to become pervasive and jeopardizing, we need to redefine the near future in a more sustainable way, in balance between cognitive computing and human intelligence.

The research aims to frame the role of designers in shaping a new culture of innovation in such sector, where advanced technological innovation coexists with more traditional machineries and with the obsessive care for craftsmanship. It concerns the design, development and validation of skills, models, methods and tools to address large-scale changes when they impact such a specific industry as that of textile-knitwear.

The proposal challenges designers' ability to bridge arts with sciences by linking manufacturing and technological systems with cultural and societal evolution (Bertola et al., 2021), to generate human-centered results in the field of textile-knitwear contaminated by the contribution of other disciplines like engineering for AIs, computer vision, machine learning, and knowledge of advanced manufacturing technologies.

Keywords

Industry 5.0, Textile-Knitwear Design, Advanced Textile Manufacturing, Artificial Intelligence, Machine Learning