



Topic of the Speech:

Creation of a Metaverse Ecosystem for Supporting Textile/
Fashion Design by Combining Digital Simulations and AI-
Based Human-Product Interactions

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Professor Xianyi Zeng is a full professor (exceptional class) in ENSAIT Textile Engineer School, France, Director of the GEMTEX National Laboratory, and also a guest professor of Donghua University, Soochow University, Nankai University and Wuhan Textile University. He has the French National Knight's title in the Order of the Academic Palms and was holder of the Innovation R&D Award from France-China Committee in 2021.

In ENSAIT, he is head of the Department of Design, Distribution and Management and the Research Group for Human-Centered Design. His main research interests include artificial intelligence, digital fashion, sensory analysis, intelligent wearable systems, computerized garment design and customized production management.

He has published more than 150 papers in peer-reviewed international journals and presented more than 250 papers at international conferences, and supervised more than 35 PhD students. In addition, as project coordinator, he has conducted three European projects (Asia-Link, SMDTex – European Joint Doctorate Program on Textile Sustainable Design and Management (Erasmus Mundus Program), FBD_BModel – Fashion big data and business model (H2020 Program)) and a number of national and regional research projects such as PRTH (French National Research Program for Textile and Clothing), IOTFetMov (ANR Program), Camille 3D (FUI Program), SUCRE (ARCIR Program) and industrial projects in cooperation with international groups in France and Europe.

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ABSTRACT (NO MORE THAN 500 WORDS:)

Marked by renaming his company “Facebook” to “Meta” by M.Zuckerberg in 2021, the concept of Metaverse has been widely discussed in industrial and academic communities beyond the ICT areas. According to the Meta’s technical report, Metaverse is bringing infinite business possibilities to all types of sectors and occupations, especially in entertainment, museum exhibition, healthcare, military, real estate, manufacturing, and education. It is considered as a ternary digital world established on the basis of digital technology integrating the virtual and real worlds, which people enter with digital identities. Compared with the existing ICT tools, Metaverse has a strong sustainable content and social meaning, referring to a 3D virtual world where avatars engage in political, economic, social, and cultural activities. It is widely used in virtual world-based on daily life where both the real and the unreal coexist.

The concept of Metaverse is interesting for the fashion industries (e.g. garments, shoes, jewels, furnishing). The current digital tools (e.g. garment CAD, avatars) have been successfully applied in some specific stages of fashion product design but cannot optimally deal with the design physical content (e.g. consumers’ personalized requirements on aesthetics and functionalities) and interactions with the physical world (real products, raw materials and processes) and human (user: perception, emotions, body shape, ergonomics; designer: experiences, knowledge) in a specific socio-cultural environment. In fashion product design, an important challenge is to optimize complex human-product interactions, dealing with physical contact, human five senses, process and functionality-based engineering criteria and user experience-based industrial design criteria.

In this presentation, a comprehensive overview will be given on the concepts and applications of Metaverse with a focus on its potential impacts on textile/fashion digitalization.