

**Topic of the Speech:**

Research on Knowledge Modeling of Business Suit Pattern Design and Development of Automated Patternmaking Platform

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**Dr. Long Wu** obtained his Ph.D. degree from the Hong Kong Polytechnic University in 2013. He is currently serving as an associate professor in the School of Apparel and Art Design of Xi'an Polytechnic University. He teaches subjects about Apparel Production Technique, Apparel Machinery, Anthropometric Technology and Application, etc.

As the main participant of the National Natural Science Foundation of China in 2013 (61303120), Dr. Wu carried out research work in Shaanxi Union Research Center of University and Enterprise for Apparel Intelligent Design and Manufacturing. Over the last several years, he received an outstanding student papers competition award in TBIS 2011 and an outstanding research papers competition award in TBIS 2014.

Also, Dr. Wu was a member of the expert committees of the Garment Industry Association in Shaanxi Province between 2016 and 2019. Funded by China Scholarship Council in 2019, Dr. WU became a visiting scholar in the School of Fashion and Textiles at RMIT University in Melbourne, Australia from October 2019 to May 2020. In 2021, he was appointed the vice director of the Garment Customization Committee of China National Garment Association (CNGA).

## **Research on Knowledge Modeling of Business Suit Pattern Design and Development of Automated Patternmaking Platform**

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### **ABSTRACT (NO MORE THAN 500 WORDS:)**

The "one-person-one-pattern" personalized customization production model in the apparel industry was rendered feasible by the knowledge-based automated pattern design process investigated in this study. Personalized customization demands are usually not met by traditional Computer-Aided Design solutions. In order to achieve the intelligent and automated development of patterns, this research suggests applying knowledge modeling methodologies to convert pattern makers' design expertise into computer-processable garment pattern design models.

Analyzing design concepts, techniques, and procedures is the initial step in the study topic to extract formalizable knowledge items and build a parametric connection model for clothing designs. In order to improve both explicit and implicit knowledge as well as design principles and ultimately achieve knowledge automation, it subsequently employs a directed graph model to express the topological and geometric links between patternmaking parts. Finally, it provides technical support for achieving intelligent and automated design by summarizing a technique for building garment pattern design models based on design concepts, methodologies, and processes.

This research effectively supports the intelligent design of garment patterns by presenting the directed graph based knowledge expression approach and the parametric connection model for garment designs. Advanced design concepts and effective procedures are offered here to realize the production model of "one-person-one-pattern" personalized customization. Additionally, this provides crucial support for the new paradigm of "production-consumption integration" in the e-commerce environment. The research findings have the potential to greatly boost the effectiveness and quality of clothing design, reinforce an organization's core competitiveness, and improve order fulfillment capabilities.