



Modular 3D-Printed Eyewear in Fashion: A Method for Personalization Inspired by Interactive Objects

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Abstract

This article describes the development of three-dimensional eyewear inspired by the Russian wooden lace technique. This study aims to design modular three-dimensional eyewear that can be customized through interchangeable decorative elements. The methodology is based on the analysis of the patterns and symbolic meanings of the Russian wooden lace technique, followed by a design process involving sketching, form experimentation, and digital modelling. This technique is traditionally used in window frame design and reflects cultural values, historical context, and symbolic meaning. Personalized accessories that adapt to style, mood, and cultural identity are increasingly prominent in modern fashion. Personalized accessories articulate an emotional connection. When users can select and modify accessory elements based on their personality and preferences this enhances a sense of belonging and enables individuals to express their uniqueness. An accessory becomes not only an element of style, but also a part of personal identity. A modular approach to eyewear design enables the creation of personalized user experiences. This research contributes cultural value. Cultural heritage elements are transformed into modern design solutions for modular eyewear. The development process involves analyzing the Russian wooden lace technique, its elements, and their meanings. Experimenting with shapes, patterns, and colors facilitates sketch and development and the creation of unique eyewear designs. The eyewear consists of a frame and interchangeable modular elements. Three-dimensional modelling enables the realization of the design to reality, and the creation of complex eyewear forms. The results demonstrate the successful development of modular eyewear with interchangeable elements using three-dimensional modelling. In conclusion, three-dimensional modelling provides an effective approach to designing personalized accessories that integrate modern design and cultural heritage.

Keywords: *Eyewear, Three-Dimensional Modelling, Personalization, Russian Lace Wood Carving*