Computational Personalization through Physical and Aesthetic Featured Digital Fabrication

身体性及び審美性に即したデジタルファブリケーション技術による
コンピューテーショナルパーソナライゼーション

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Personalization is one of the most fundamental goal in mature industrial society. Manufacturing method for individuals called custom made are still applied in various areas such as sports and clothing, however there are some limitations in regards to cost because of a short of craftsmen who make them. At the same time, the end-to-end production by craftsmen have any design spaces where users interact. If you want to customize the product accordingly, you need to advance manufacturing while communicating with craftsmen, and then you need to have proper knowledge to talk with craftsman as equals.

In this thesis, we seek the design method for personalization through physical and aesthetic featured digital fabrication. First, we investigate methods to update the concept of an existing industrial instrument based on user's physical data. The values obtained in this method can be then used to realize the one inexpensively by combining some ready-made goods and digitally fabricated adapters. In this attempt, we seek the next approach by topology optimization, the typical computational shape-optimization method. Second, we investigate methods to personalize an assistive device based on user's aesthetics. OtonGlass is not only a toolkit consist of some equipments such as Arduino and Raspberry pi, but also high affinity with personal fabrication because it aims to create a platform on which each person can refabricate the being disclosed design of the cabinet. Therefore, its versatility is high compared to other competing products. Then, we investigated the usability such as satisfaction and the compatibility to some assumed scenarios by teaching how to redesign the cabinet of OtonGlass to the participants and asking them to design it to their favorite one at the workshop. Finally, we considered the comprehensive applicability of the design of assistive devices.

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