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Tactole : Reconfigurable Tactile Cloth

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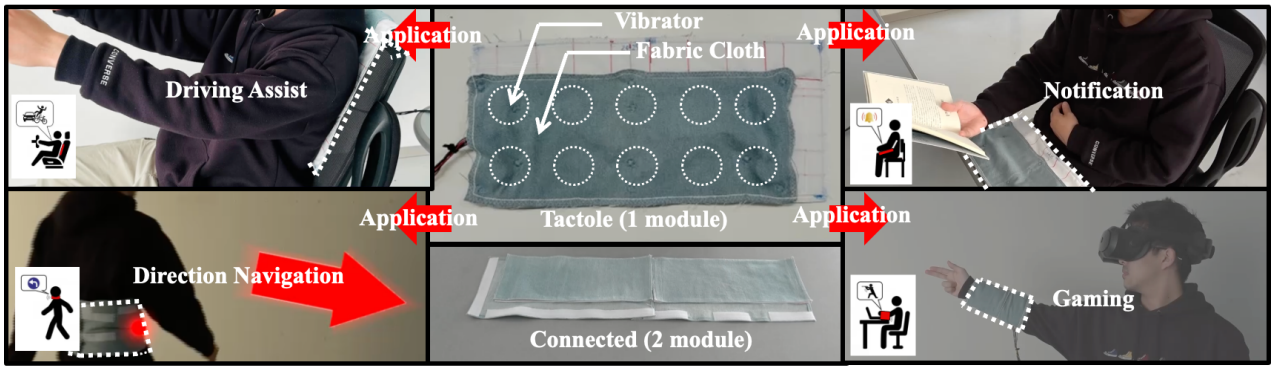

Fig. 1 Photograph and applications of. The proposed reconfigurable tactile device. The tactile device consists of several tactile vibrators and fabric cloth body with velo tapes (Middle). The tapes enable a device to connect other devices to change the size. The tactile device can change its shape according to use cases (Right and left).

***Abstract*—This study proposes a fabric-based tactile device that focuses on the freedom of shape inherent in the fabric. The device is structured with embedded vibrators, allowing it to be reconfigured into various shapes through folding to suit different applications and module connections. This presentation will demonstrate several applications as examples.**

Keywords—Fabric, vibrotactile stimulation, reconfiguration, modular design

I. Introduction

Due to its structure, fabric possesses high flexibility, allowing it to be rolled or folded to change shape. Introducing such characteristics into tactile/haptic devices makes it possible to design devices that can change shape according to the desired application. Most existing fabric-based tactile/haptic devices aim to be used along the body, and the characteristic of shape change inherent in fabric has not been fully explored [1, 2].

In line with this concept, this demonstration proposes a fabric-based haptic device embedded with vibrators. The device has a flexible structure with multiple vibrators embedded within the fabric, and it can be connected through modularization [3]. It can change shape by folding or rolling. This demonstration will showcase several applications of the device.

II. Device Design

The middle of Fig. 1 shows the structure of the device. It measures n mm × n mm, with n vibrators (Vp210, Acouve Laboratory) embedded inside. This forms a single module, and the size of the device can be adjusted by connecting modules via Velcro tapes at the ends as shown in the bottom of Fig. 1.

III. Applicatiions

The right and left parts of Fig.1 show application examples using the proposed tactile device. Due to its fabric nature, the device can be draped over the body or a chair like a stole, providing haptic feedback to the user. Additionally, leveraging its flexibility, it can be wrapped around any part of the body to be used as a wearable haptic device. By utilizing the flexibility of the fabric to change its shape, this haptic device can be applied to various uses.

IV. Conclusion

This demonstration proposes a fabric-based tactile device capable of folding and connecting, and showcases several application examples. By exploring different folding and connection methods, the device can be utilized for various applications beyond those introduced. Future work will involve exploring the design space of the device.

References

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