



VIRTUAL FIGURE PRESENTATION USING PRESSURE-SLIPPAGE-GENERATION TACTILE MOUSE

Yiru Zhou¹, Xuecheng Yin¹, and Masahiro Ohka¹

¹Graduate School of Information Science, Nagoya University

Email: ohka@is.nagoya-u.ac.jp

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Abstract - Since our tactile mouse can generate not only distributed pressure but also slippage force, it is expected that it can enhance the reality degree of virtual reality generated by it compared to conventional tactile displays. In previous works, this tactile mouse was effective for edge tracing of virtual figures. However, advanced tests are required using psychophysical experiments to evaluate this tactile display. In this paper, four virtual relief-like figures, a triangle, square, pentagon and circle, are presented using the tactile mouse. These virtual figures have a constant height of around 1 mm against the background. To evaluate the effectiveness of combined presentation of pressure and slippage, not only pressure but also tangential force is generated on the tactile pad on which an operator puts his finger in combined presentation tests when the mouse cursor travels on the figure. In a series of experiments, five male subjects judge which figure is presented. It is found that the percentage of correct answers is increased in the combined presentation when the circle and pentagon are presented. Therefore, the combined presentation provides plain virtual sensation to allow the operator to more easily understand the sensation.

Index terms: Tactile Sensing, Virtual Reality, Figure Presentation, Pressure-slippage, Mouse.