Resurrecting the Tromba Marina: the impact of a friction model on the interaction with a virtual instrument

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ABSTRACT

Tromba stuff Phantom omni

1. INTRODUCTION

The PHANTOM Omni (or simply Omni),

2. HARDWARE DESCRIPTION

The PHANTOM Omni (or simply Omni) is a six-degrees-of-freedom haptic system developed by SensAble Technologies. FireWire [1]

3. IMPLEMENTATION

The raw data provided by the Omni is the following:

- absolute position of pivot point B2 (three degrees of freedom)
- rotation (three degrees of freedom)
- pressure (force depth **check whether this is correct**)

The axes are labelled as follows in relation to the virtual instrument: x-axis - width (horizontally across the soundboard – the common interaction direction), y-axis - height (floor to ceiling) and z-axis - depth (horizontally perpendicular to the soundboard).

The end of the bow – where a user normally holds it – has been placed at the pivot point B2 ← **not exactly true** The fact that pivot points B1-3 do not provide force feedback gives rise to an issue in our application. If the virtual position of pivot point B2 is not the current point of interaction, in the extreme case when the user is bowing using the end of the bow, a force has to be applied as to not go through the string. To solve this issue, we created a separate object with which the bow (pivot point B2 to be exact) will interact with. The y-rotation and y-position of this exactly follows that of the Omni-pen and uses the virtual string as the centerpoint. Furthermore, its position in the x-z–plane is determined by the distance between B2 and the string.

4. EVALUATION

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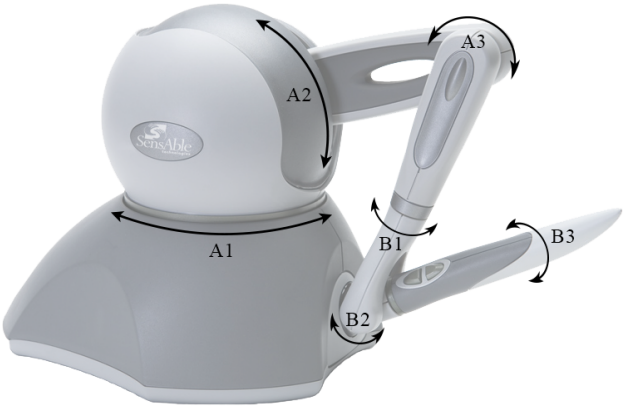

Figure 1. The PHANTOM Omni has six degrees of freedom, three of which provide force feedback (A1-3), and three not providing this feedback; only tracking position (B1-3).

5. DISCUSSION

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6. CONCLUSIONS

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Acknowledgments

Thanks thanksthanks

7. REFERENCES

[1] A. Someone, B. Someone, and C. Someone, "The title of the conf. paper," in *Proc. Int. Conf. Sound and Music Computing*, Porto, 2009, pp. 213–218.