

## ***Softly Elastic 6 DOF Input***

**Martin Sundin<sup>1,2</sup> and Morten Fjeld<sup>2</sup>**

<sup>1</sup>Axiglaze AB, Stockholm, Sweden

<sup>2</sup>TableTop Interaction Lab, CSE, Chalmers University of Technology,  
Gothenburg, Sweden

The aim of this work is to identify the properties that a universal multidimensional input device should have in order to optimally function with 3D applications, including Web browsers, window managers, digital content creation software, and computer games. Such applications have become increasingly effective due to the rapid development of computer graphics. This situation has generated a greater need for multidimensional input devices. It is conjectured that an ideal universal multidimensional input device should allow for 2D pointing as well as precise manipulation and navigation within 3D environments. Accordingly, the device should offer (a) six degrees of freedom, (b) a range of motion adapted to finger manipulation, (c) elastic suspension providing rich sensory feedback, and (d) position and rate control. The input device, SpaceCat, was designed to offer all these properties. Although such devices are known to benefit 3D navigation, this work demonstrates that they also benefit 3D object manipulation.

### **1. INTRODUCTION**

With the appearance of three-dimensional (3D) graphic applications for desktop PCs, a need for efficient and effective interaction with 3D environments for both home and office use has arisen. Some typical professional uses are in the fields of engineering, architecture, medicine, entertainment, and digital content creation.

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Correspondence should be addressed to Morten Fjeld, TableTop Interaction Lab, Computer Science and Engineering, Chalmers University of Technology, Gothenburg, Sweden. E-mail: morten@fjeld.ch

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**you may also contact the authors, at [morten@fjeld.ch](mailto:morten@fjeld.ch)**