CIDA: an Interaction Devices Management Platform

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Abstract. This paper presents CIDA, an input devices management platform that aims to abstract the type of the device used. The platform allows to change the interaction devices used by an application, as well as the way of interaction abstracting concepts such as connectivity, property mapping onto functionalities and driver utilization dependence. Input devices are accessed through plugins, which are responsible for dealing with their particular features. This way, the platform recognizes them as members of the supported device families. In order to highlight CIDA’s advantages and limitations, some case studies were performed for both development of new applications and adaptation of existing ones.

1. Introduction

Most computer programs use standard ways to interact with the user, through well-known input devices, such as keyboards, mice and joysticks. As alternative and more advanced forms of interaction are introduced, some changes to the original program design become necessary in order to allow it to work using the new devices, unless they are equivalent to the ones previously used. Not all devices are similar in their conception and in the events they generate. Hence, a developer often needs to rewrite or extend its application with a new specific interaction module. This process must be repeated for every additional device that the application requires to support.

This work describes a novel input devices management platform, named CIDA (Chaotic Interaction Devices Abstraction). Chaotic behavior, in mathematics and physics, is the apparently random or unpredictable behaviour in systems governed by complicated (nonlinear) deterministic laws, as the result of high sensitivity to initial conditions [1]. In this work, the term chaotic is used to generalize the type of abstraction proposed, since using most diverse devices does not need to have order or visible organization. Moreover, the platform’s implementation allows the use of any device that application requested characteristics, as it will be shown later.

CIDA provides an input devices abstraction. As a result, user interaction may be changed, for example to support special needs of physically impaired users. A new