Abstract

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With the hardware getting smaller and smaller it sometimes seems, that todays keyboards are a bit left behind by the development. PDAs and cellphones are close to being a complete personal computer, but controlling such devices often relies on over-sized keyboards. Over the last years some advances have been made in portable keyboard design more, or less giving up the original keyboard-look to earn other advantages.

The first part of this thesis provides an overview of the current state of development regarding portable keyboards. Various examples like rollable keyboards, touchscreens, interactive gloves and miniature keyboards are presented, all with their specific advantages and drawbacks. A specific example, the Celluon projection keyboard by Canesta Inc., is explained in more detail.

After the introduction, the second part focuses on the prototype design and implementation of a virtual keyboard using image processing. The technical basics are presented leading to requirements both for software, hardware and the implementation. Testing this prototype as well as discussing the results completes this part of the document.

Finally the last part gives a summary of the gathered results as well as an outlook on future developments.

Keywords: projection keyboard, virtual keyboard, Java, JMF, JDMS, DirectShow, webcam, gui, camera, image processing, blob coloring algorithm