Touching the Future: Enhancing Keyboard Interaction with Touch-Sensitive Surfaces

Thema:
Touching the Future: Enhancing Keyboard Interaction with Touch-Sensitive Surfaces
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Status:
abgeschlossen
angelegt:
2023-05-09
Antrittsvortrag:
2023-12-18

Hintergrund

Touch interaction has become an integral part of our daily lives, from smartphones and tablets to household appliances and cars. Despite this, traditional keyboards have remained relatively unchanged for decades, with limited touch-based capabilities. While keyboards are essential for typing and other tasks, their functionality could be greatly enhanced by incorporating touch-sensitive surfaces.

The goal of this research is to explore the potential benefits of touch-sensitive surfaces in keyboard design and how they can improve the overall user experience. By integrating touch-based interaction into keyboard design, users can perform tasks more efficiently and intuitively, leading to increased productivity and reduced physical strain. In addition to improving traditional typing tasks, touch-sensitive surfaces could also expand the functionality of keyboards to include new modes of interaction, such as gesture recognition, touch-based shortcuts, and more. By conducting user studies, this research will provide insights into the most effective ways to incorporate touch-sensitive surfaces into keyboard design and how they can enhance user experience beyond traditional typing tasks.

Zielsetzung der Arbeit

The goal of this research proposal is to explore and develop new ways of enhancing the functionality

and overall experience of classical keyboards by incorporating touch-sensitive surfaces. This work aims to investigate the potential benefits of touch-sensitive surfaces on keyboard interaction, such as improved accuracy, speed, and ease of use. Additionally, this study will investigate the potential for integrating touch-sensitive surfaces with existing keyboard designs and explore new design possibilities. The ultimate objective of this work is to develop a new generation of keyboards that offer a more efficient and intuitive interaction, resulting in enhanced productivity and user experience. Test

Konkrete Aufgaben

1. Obtaining an overview of previous research on touch-sensitive keyboards.
2. Formulating a research question and contemplating how to contribute to particular research
3. Building the prototype touch-sensitive-surface tu use as an overlay for an analogous keyboard
4. Developing software that integrates touch functions to enhance usability
5. Conducting a user study to compare the analogous keyboard with the touch-sensitive keyboard to evaluate user experiences with both interfaces
6. Assessing the results which involves a comprehensive evaluation of the findings obtained from the study.

Umsetzung

The prototype will be built based on the Multi-Touch Kit designed by Saarland University. This kit includes instructions for constructing the prototype using an Arduino Uno, along with the corresponding software for scanning the data. There are numerous ways in which touch-sensitive surfaces could enhance user experience, and data input rates. My study will specifically focus on whether touch keyboards can improve the gaming experience. To explore this, I am developing a game in Unity, which communicates with Arduino via the serial port, then interprets and utilizes its data. Subsequently, I will conduct a user study in which participants will play the game using both an analog keyboard and a touch-enhanced keyboard. The study aims to investigate user experience and game progression, comparing the two input methods to gain insights into the potential impact of touch-sensitive devices on gaming.

Erwartete Vorkenntnisse

Keine

Weiterführende Quellen

https://hci.cs.uni-saarland.de/projects/multi-touch-kit/