Exploration of Foot-controlled Input Devices for Desktop Applications

Thema:
Exploration of Foot-controlled Input Devices for Desktop Applications
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Hintergrund

The predominant way for humans to interact with tools and technology is by using their hands. There are several scenarios where both hands are occupied and other modalities are used for interaction. One example is foot-controlled input, which is used in a variety of applications, for example music (controlling effects pedals, playing the bass drum or an organ's bass register, using a piano's expression pedals), crafting (controlling a sewing machine), or driving vehicles (clutch/break/gas pedals in a car, rudders in an airplane).

In desktop scenarios, there is a multitude of use-cases for foot-controlled input devices: invoking shortcuts (and thus reducing finger strain), controlling secondary applications (such as media playback), or making applications more accessible. In practice however, foot-controlled input devices are rarely used. HCI research on this topic focuses mainly on very specific applications and/or tracking technology.

Zielsetzung der Arbeit

Goal of this work is to apply a user-centered design approach to design a flexible foot-controlled input device for desktop applications. Based on user requirements, a functional prototype should be implemented. This prototype should be tested with users in a real-world scenario. A method covering a long stretch of time, such as technology probes or diary study, could be used to gather insights into

users' behavior beyond a controlled laboratory setting. User requirements, insights from the prototyping process, and data from the user study should be combined into design guidelines for foot-controlled input devices.

Erwartete Vorkenntnisse

- User-Centered Design and Qualitative Methods
- Basics of Hardware Prototyping

Weiterführende Quellen

TBD