'combining Head Gyro and Rear typing for enhanced interaction.'

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Introduction

- **Mobile HCI**

It is a field of study that focuses on the design, evaluation, and implementation of interactive systems for mobile devices such as smartphones and tablets.

Designing interfaces and new interaction techniques that are intuitive, efficient, and user-friendly on these devices requires a deep understanding of how users interact with their mobile devices in different contexts and environments.

MobileHCI'24
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Proposed Idea

1)The proposed new interaction technique helps in providing the user with improved expressiveness.

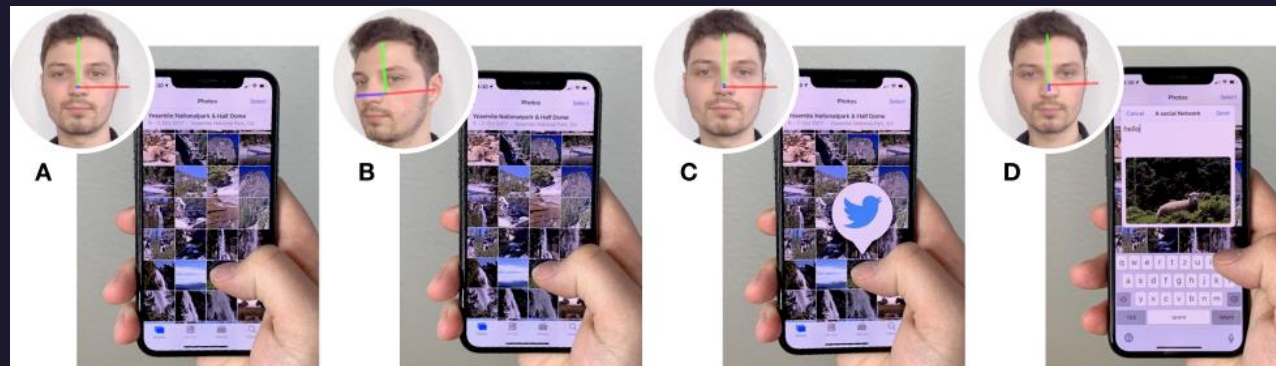2)The new technique combines RareType and Headbang.

3)The RearType mechanism is to have a keyboard on the back of a device.

4)The concept of Headbang is to have users trigger certain actions by rotating their heads in a particular direction.

RearType and HeadBang

(a) Front of RearType prototype

Features of HeadGyro and RearTyping

- Example can be sharing a photo to a platform like twitter or Instagram.

- The user selects the photo and then moves head slightly away from the phone and the desired action will be displayed on the screen and the user will lift their thumb to perform the action.

- Headbang allows the user to add further actions. The gesture is usually performed while tapping and releasing the object.

- A user can cancel the selected action by sliding finger outside of image before lifting it on selected image.
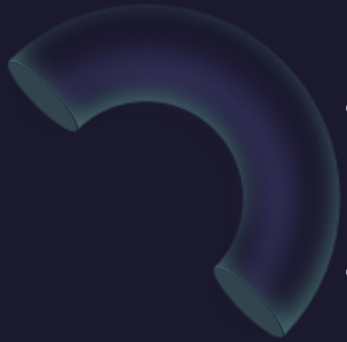
Features of HeadGyro and RearTyping

- RearTyping provides users with the comfort of providing keyboard at the back of device.

- The rear has 3 lines of 5 keys per hand (e.g. "QWERTY"), so there are 30 keys on the back in total.

Combining HeadGyro and RearType

- When we combine both HeadGyro and RearType, users can switch between 2 features based on the context.

- While viewing a photo, users can use HeadGyro to share the photo and use RearType to type a comment.

- To advance this we can use stroked keys, i.e. use a different pattern on each key to recognize a key, so that we can train visually challenged users to use it.

- **Multimedia and Content Creation:**

  Photo Sharing: HeadGyro can trigger sharing options for photos. RearTyping allows users to add captions or descriptions without obstructing the image view.

  Video Editing: Content creators can use head gestures to play/pause videos, while RearTyping assists in adding titles, credits, or annotations.

Use Cases

B) Accessibility:

Assistive Technology: Individuals with limited hand mobility (e.g., paralysis, arthritis) can benefit from RearTyping for typing messages, while HeadGyro enables them to trigger actions (e.g., requesting medication refills) without physical touch.

 C) Education and Learning:

Learning Apps: Children can explore educational content using head gestures (e.g., selecting answers) and RearTyping for quizzes or notes.

Language Learning: RearTyping facilitates language practice, while HeadGyro can trigger pronunciation guides or translations.
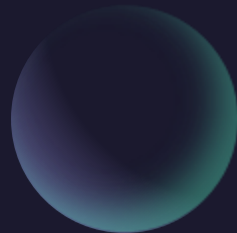
Challenges

1. Usability and Learning Curve:

Users might find it challenging to adapt to both methods simultaneously.

2. Accessibility and Inclusivity:

Consider users with varying abilities. Some may find head gestures challenging due to physical limitations.

3. Error Handling and Recovery:

When users accidentally trigger actions (e.g., head gestures or unintended rear key presses), the system should provide clear ways to cancel or recover.

Conclusion

- In conclusion, Combining HeadGyro and RearTyping has its own advantages. The proposed technique aims to elevate user experience and enhance expressiveness in mobile interactions. Through this innovative fusion of technologies, users can navigate and interact with mobile devices in a more intuitive and efficient manner. Implementing the proposed system requires thoughtful design, usability testing, and consideration of user needs. Investigating the challenges in the context of HCI can lead to innovative solutions that enhance user experiences.