Text Selection in AR-HMD Using a Smartphone as an Input Device

Rajkumar Darbar[1], Joan Odicio-Vilchez[2], Thibault Lainé[3], Arnaud Prouzeau[4], Martin Hachet[5]

[1,2,4,5]Inria Bordeaux, France | [3]Asobo Studio, Bordeaux, France

[1,2,4,5]{rajkumar.darbar, joan.odicio-vilchez, arnaud.prouzeau, martin.hachet}@inria.fr, [3]tlaine@asobostudio.com

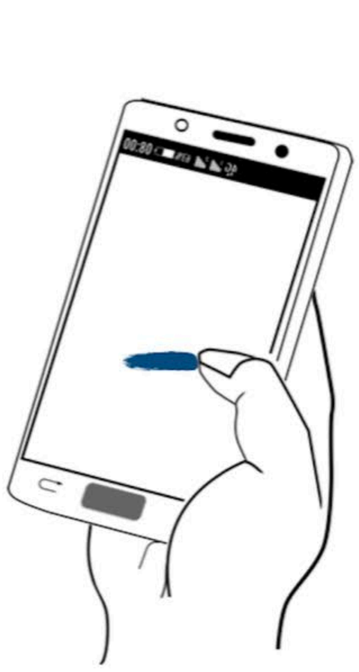
BACKGROUND

- Text selection is a common task while reading a document or browsing the web.

- Performing text selection in AR display commonly uses hand-tracking, eye/head-gaze, voice commands, and handheld controller. These techniques have their limitations:
  - Hand-tracking and eye/head-gaze lack precision and are cumbersome to use.
  - Voice interaction not possible to use in public places because of the noise.
  - For a dedicated handheld controller, users need to always carry extra specific hardware with them.

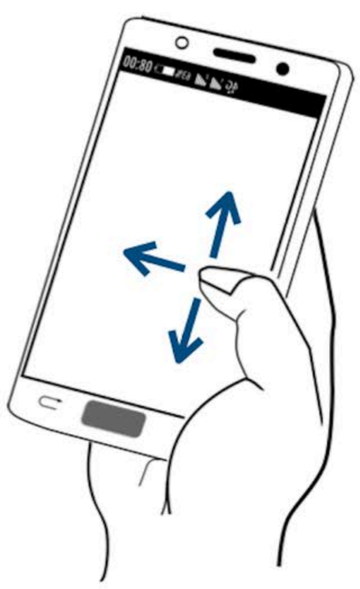
- In this poster, we explore the use of a **smartphone** as an input device to support text selection in **AR-HMD** because of its availability, familiarity, and tangibility.

PROPOSED TECHNIQUES



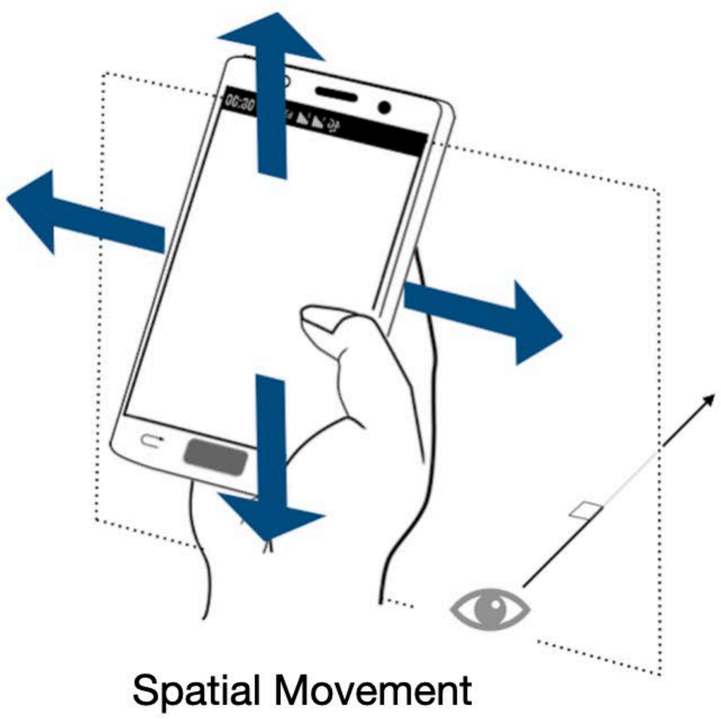
Continuous Touch

The smartphone touchscreen acts as a trackpad.



Discrete Touch

The smartphone touchscreen is used to move the cursor word-by-word.

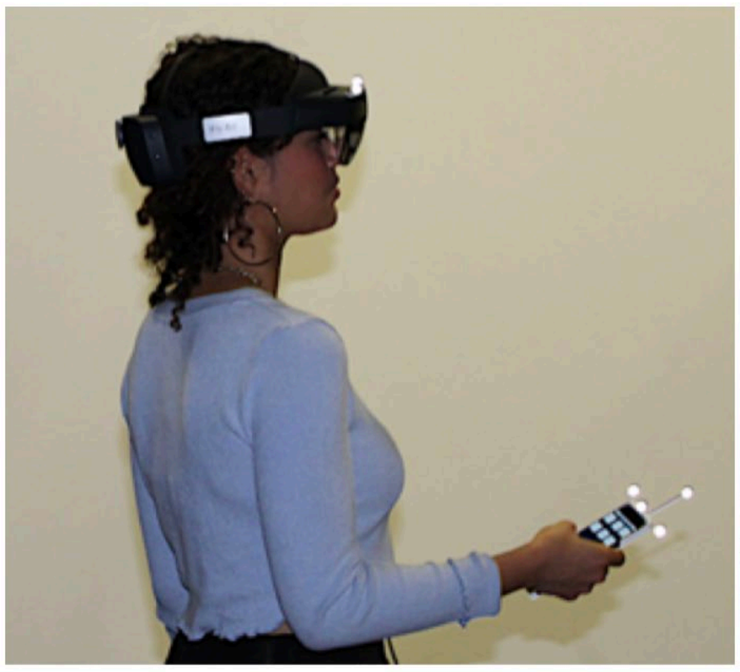


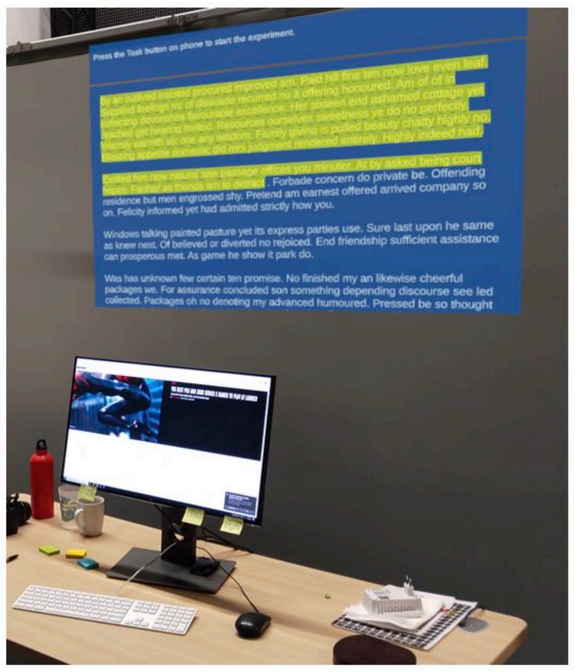
Spatial Movement

The smartphone is used as an air-mouse for AR-HMD.

Raycasting

The smartphone is used as a laser pointer.





Our implementation consisted of an HoloLens, a smartphone, and an optitrack system.

DISCUSSION & FUTURE WORK

- It is not yet clear which technique will allow users to select text fast and accurately. Our initial informal test with participants tends to show that **continuous touch** seems promising as it is easy to learn and users are already familiar with mobile touch interaction. This needs to be formally evaluated.

- We also need to compare our phone-based techniques to other input techniques like hand-tracking, head/eye gaze, and voice commands to provide design guidelines to the developer.