

AR Input Device

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Goal

Providing an alternative **input device** for Microsoft HoloLens

What is HoloLens?

Microsoft HoloLens | Mixed Reality

Why we chose HoloLens as our **target AR device**

- One of 25 TIMES best inventions of 2015
- **Very accurate and precise compared to its competitors**
- Gestures (2 type: click and bloom) and voice input implemented thoroughly

What you see in HoloLens

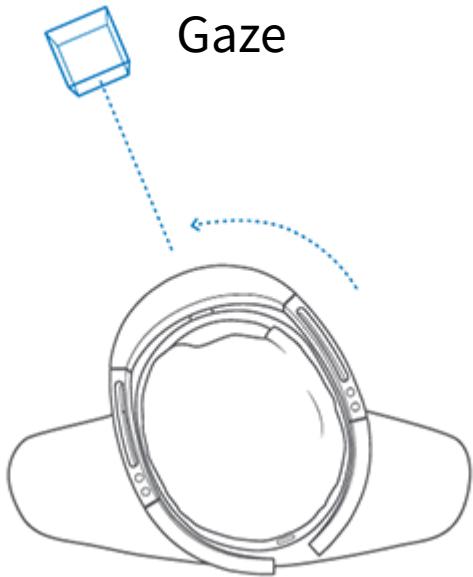


Virtual image: not touchable

→ limitations in direct task even when used in 3D world

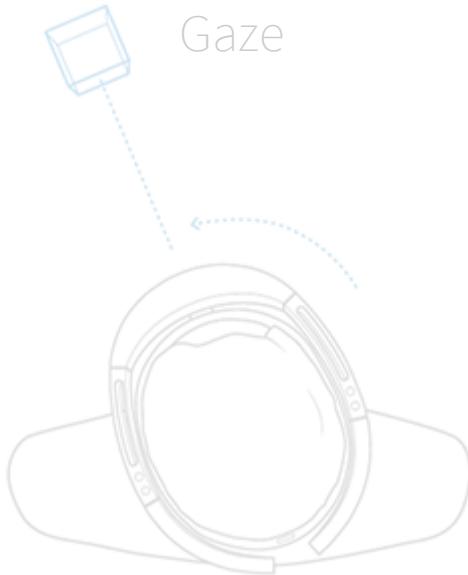


Problem We found in HoloLens

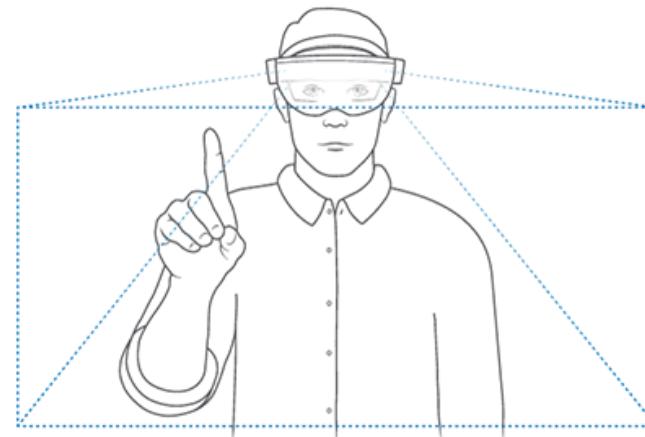


Unstable

Problem We found in HoloLens

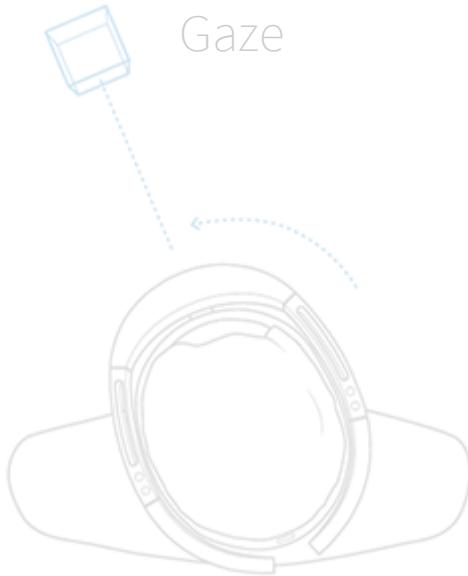


Pointing gesture



- Driving attention from others
- Arm fatigue

Problem We found in HoloLens

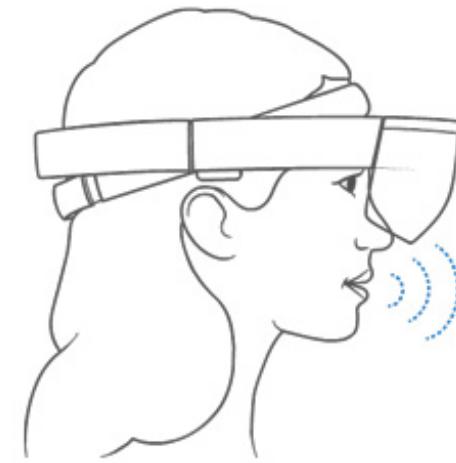


Gaze

Pointing gesture



Voice Input



- Obtrusive
- Cannot be used in shared environments

Problem Definition

- 1) Unobtrusive
- 2) Stable enough
- 3) No burden of carrying around



Finger augmentation device

Related Works about similar problem



- By closing user's index and middle fingers, he/she can pick up an object (click).
- To move an object back and forward, user **scrolls with his/her thumb** (wheel).
- The ring uses **pointing movements**. (not gesture)



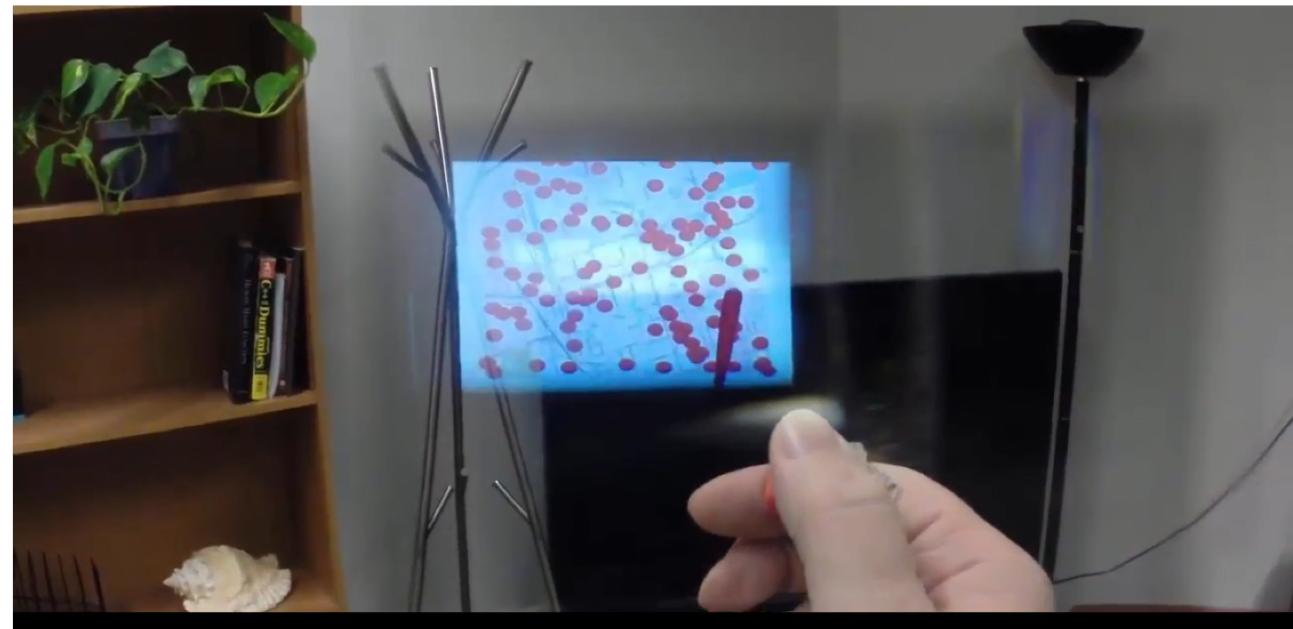
1. Pointing is obtrusive
2. Unfamiliar interaction

Related Works about similar problem

- Trackpad with ring
- ‘Click’ is activated by touching trackpad

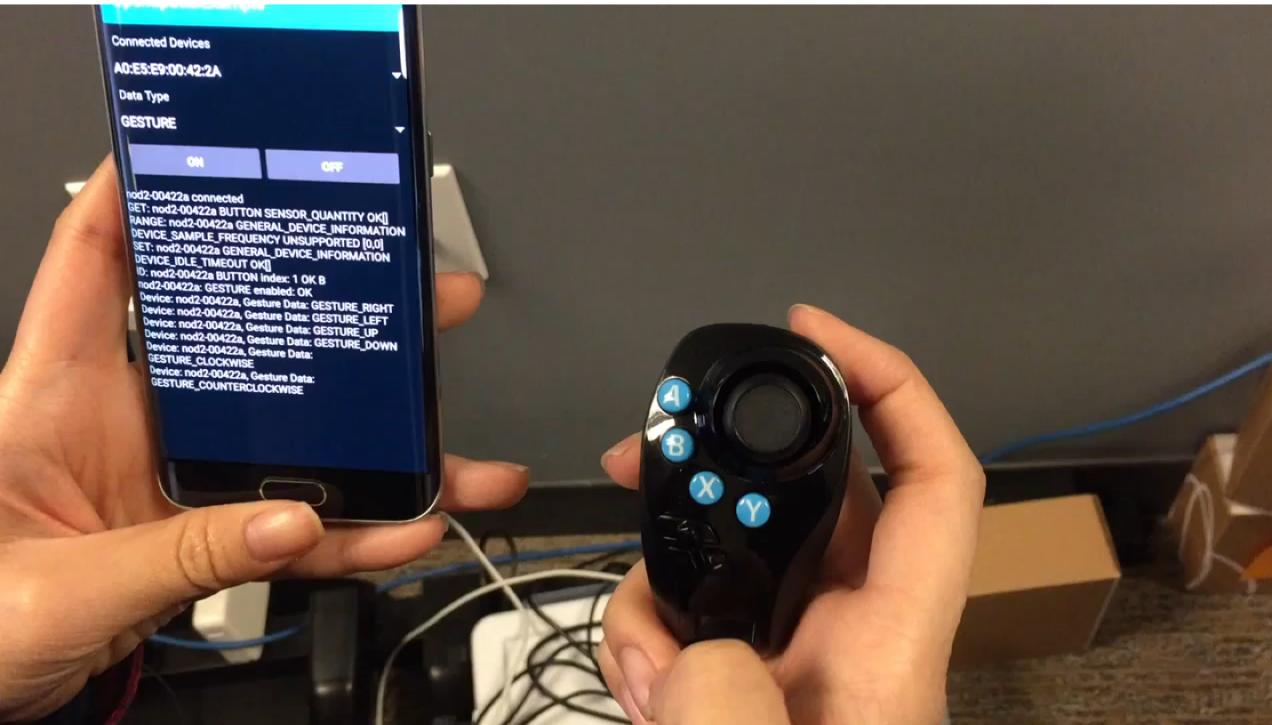


Must repeat movement



the ring IMU allows raycasting for selection too

Related Works about similar problem



- It is for AR/VR devices as well as drone.
- Motion tracking along with **hand presence and traditional joystick**
- Put the nod backspin ring on the middle finger.



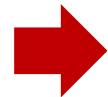
Too many buttons, too big

Topic candidate

Pointing interaction is not stable

Gesture interaction is obtrusive

Trackpad doesn't match the interaction we want to implement

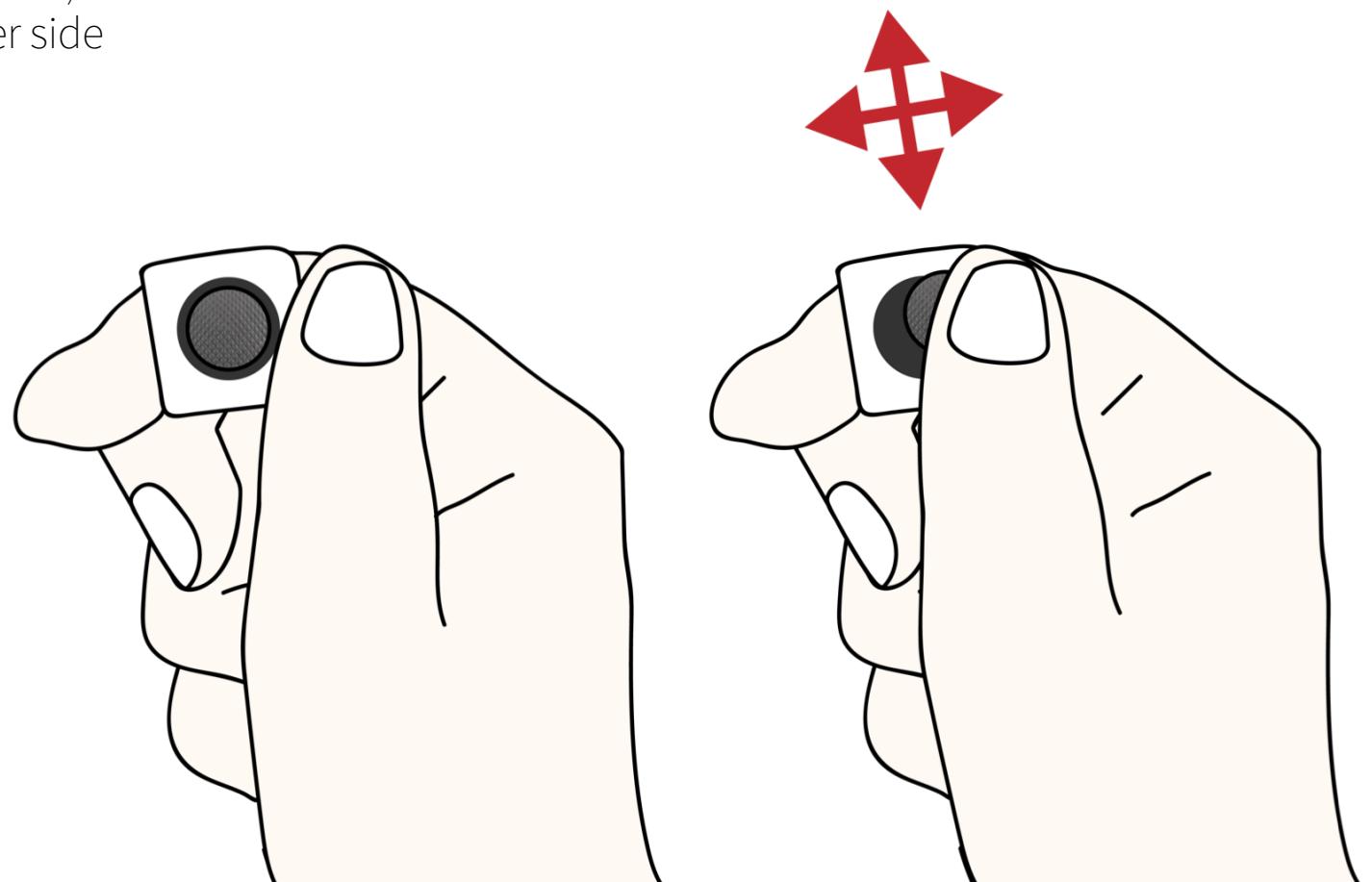


A ring with a trackpoint

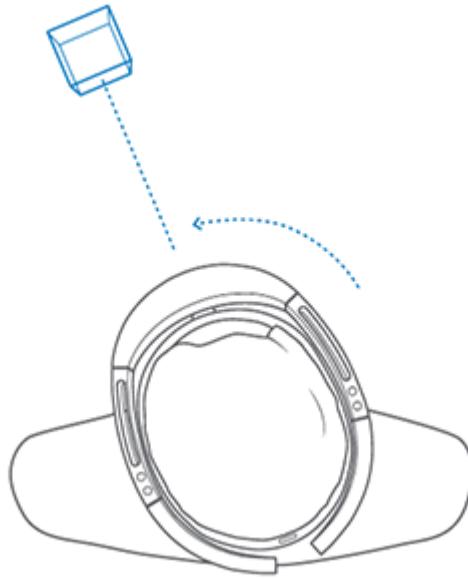
Topic candidate

A ring with a trackpoint

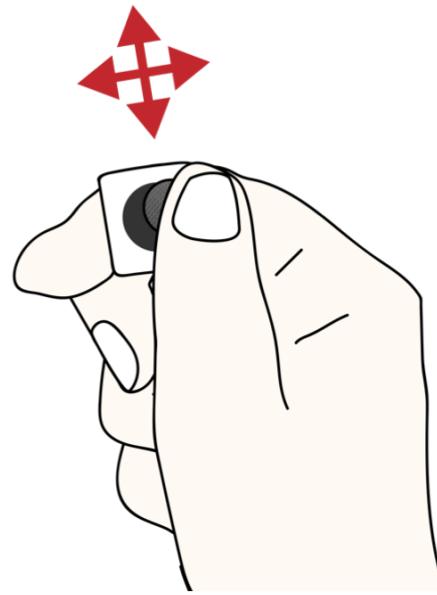
form factor (size shape, other physical specifications)
ring-shaped device, joystick attached to the outer side



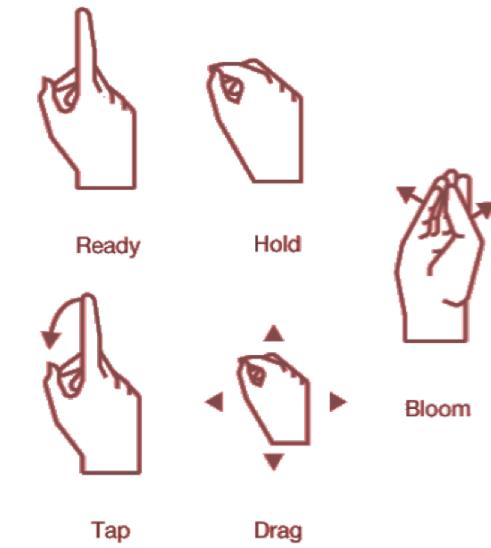
Research Question



vs.



in



Assess the performance of current **HoloLens Interaction** on our device
by comparing with existed solution

Expected Outcomes

1. Working prototype
2. Evaluation report assessing performance

Website

<https://gbiosem.wixsite.com/ar-input-device>

The screenshot shows a web browser window with the URL <https://gbiosem.wixsite.com/ar-input-device>. The page has a header with 'HOME', 'BLOG', and 'ABOUT' links, and a title 'AR_INPUT DEVICE' in red text. Below the title is a grid of nine small icons representing different AR experiences: a blue square with an 'e', a black square with a red robot head, a grey square with a tiger, a dark blue square with a green tree, a blue square with a white 'o', a dark blue square with a globe, a blue square with a white 's', and a dark blue square with a white spiral galaxy.

Mentor Meeting 1

Mentor Added! (Rasel IN) Storyline for Friday 1st presentation about "Topic & Plan" Meeting with You ryang Problem Definition, What problems you are tackling, 우리가 직접 헤로렌즈를 써보니.. (어떤 특...)



Q&A