AR Input Device

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Goal

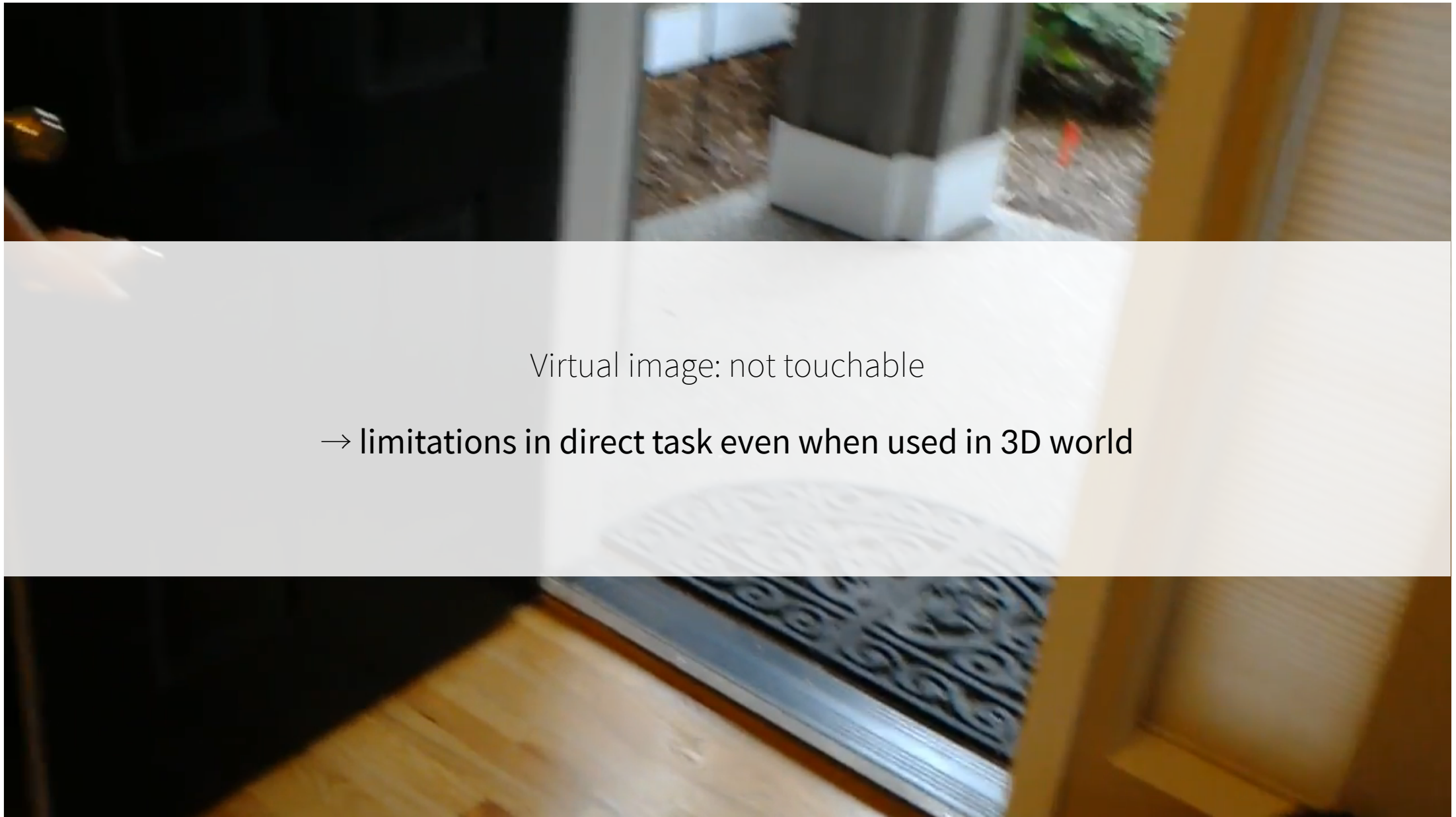
Providing an alternative **input device** for Microsoft HoloLens

What is **HoloLens**?

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

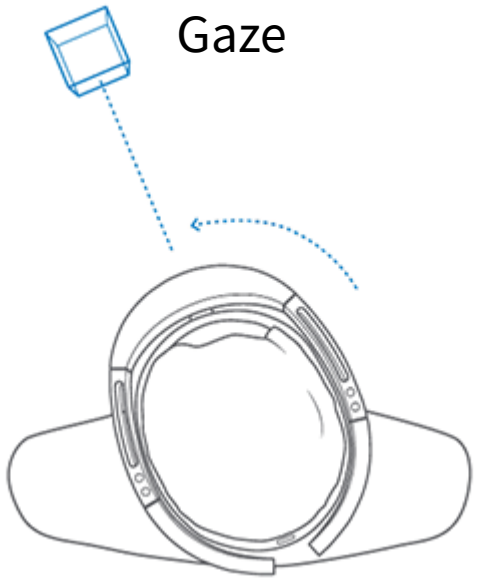
What you see in **HoloLens**



Virtual image: not touchable

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

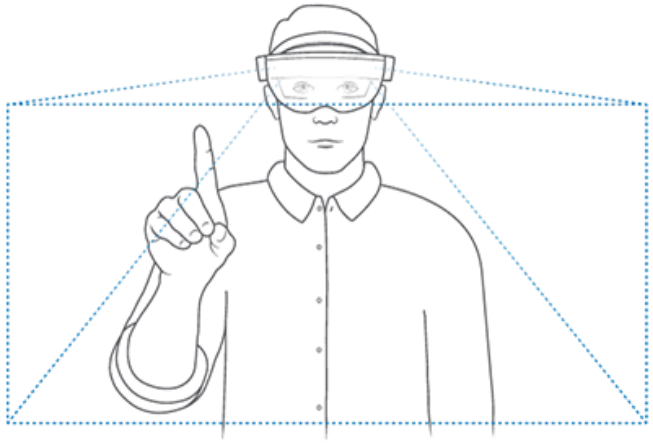
Problem We found in HoloLens



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

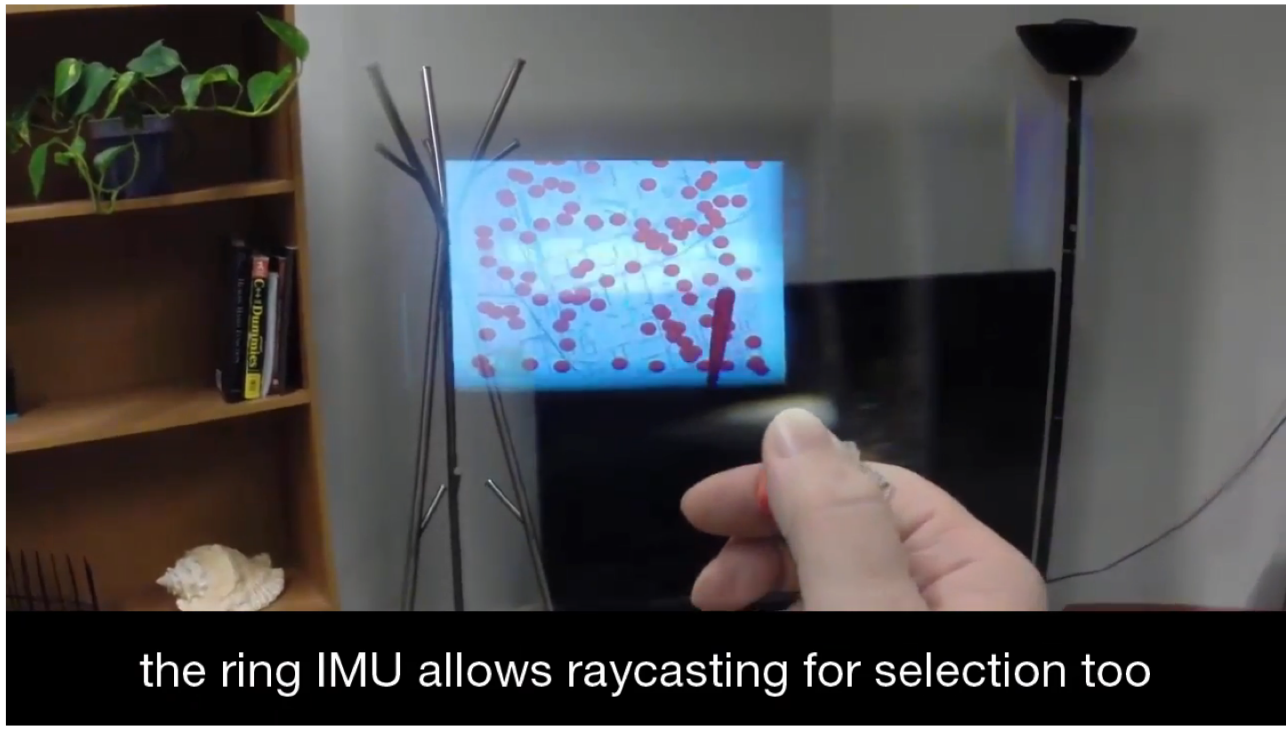
- **By closing user's index and middle fingers**, he/she can pick up an object (click).
- To move an object back and forward, user **scrolls with his/her thumb** (wheel).
- The ring uses **pointing movements**. (not gesture)

1. Pointing is obtrusive
2. Unfamiliar interaction

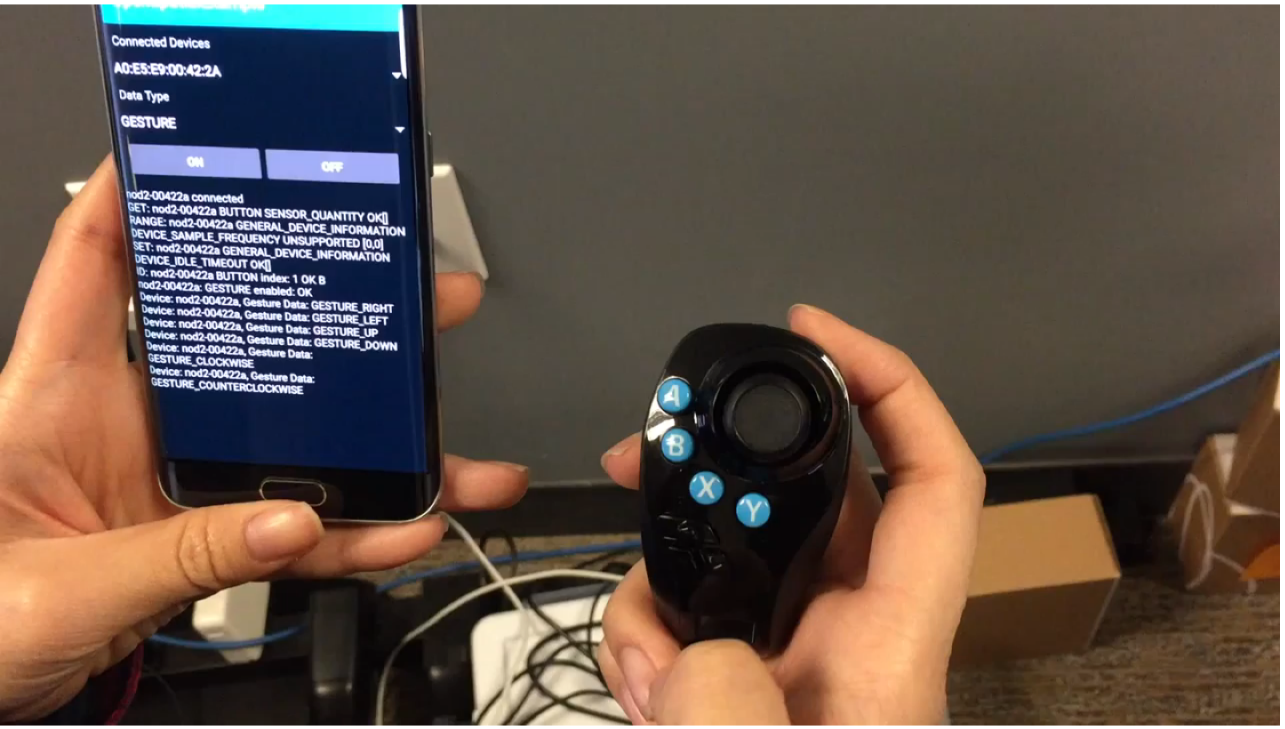
Related Works about similar problem

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

Must repeat movement



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

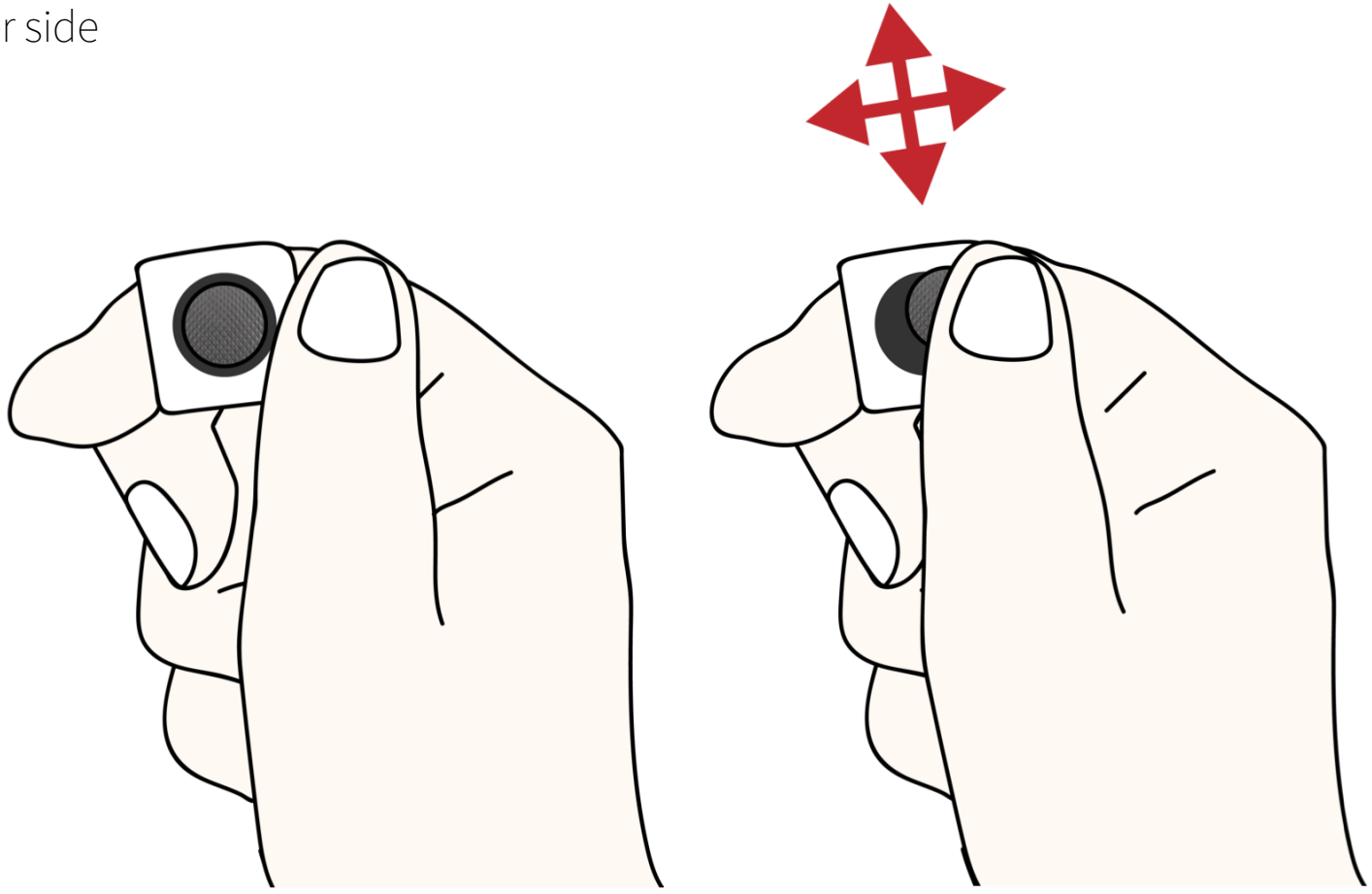
Trackpad doesn’t match the interaction we want to implement

A ring with a trackpoint

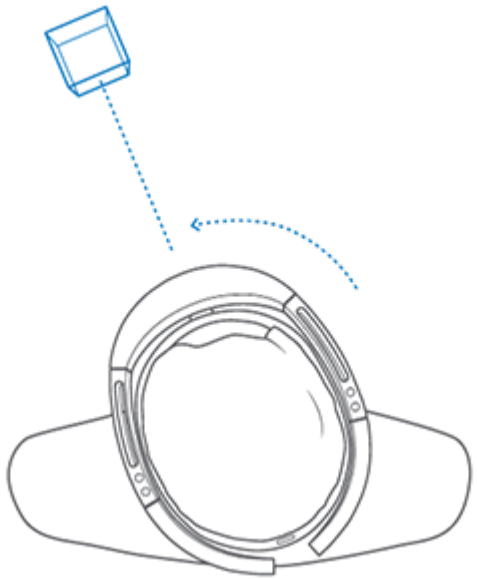
Topic candidate

A ring with a trackpoint

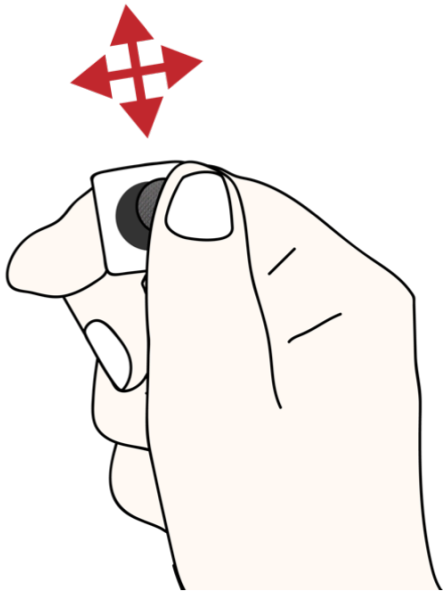
form factor (size shape, other physical specifications)
ring-shaped device, joystick attached to the outer side



Research **Question**



vs.



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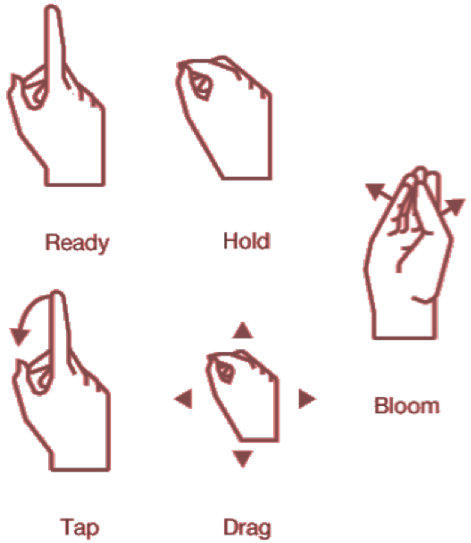


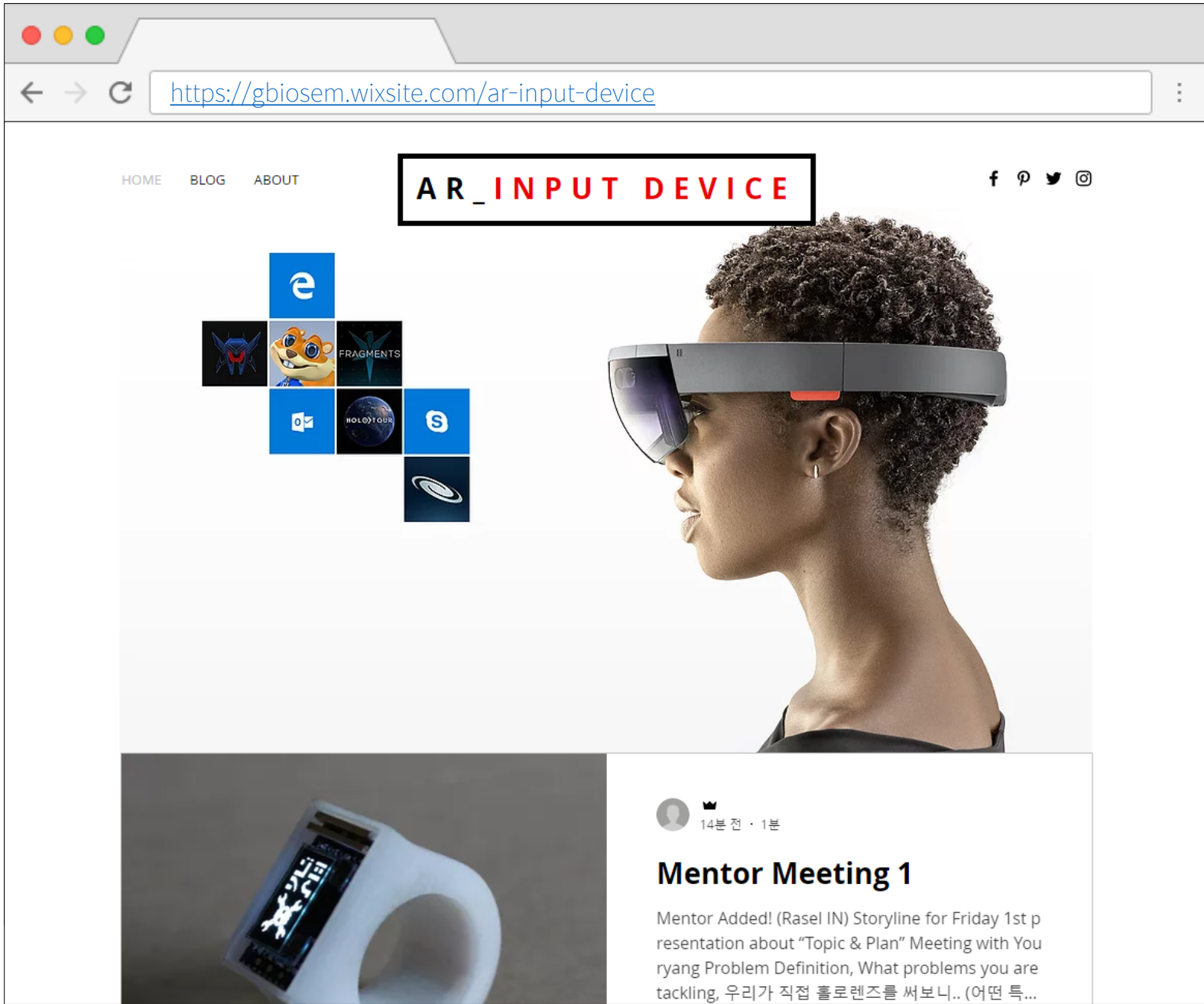
Assess the performance of current HoloLens Interaction on our device
by comparing with existed solution

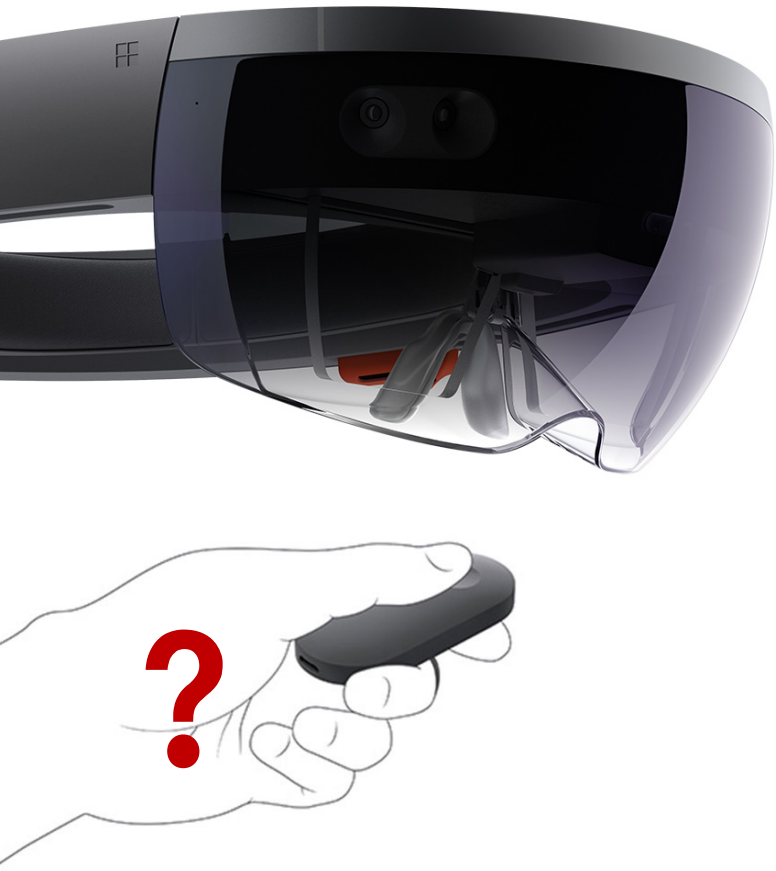
Expected Outcomes

1. Working prototype
2. Evaluation report assessing performance

Website

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





Q&A