MAG Ring: An Intuitive Method for Zoom

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Outline

• Introduction
• Related Work
• Proposed Solution
• Experimental Condition
• Future Work
Introduction

- Smartphone is replacing personal computer
- Users meet various contents with smartphone in these days
Introduction

- A quantity of information shown at a time is limited due to its screen size
Related Work

- Method of magnifying a portion of display (Lai)
Related Work

• Touch Gesture (Villamor)

- **Adjust view (zoom in)**
  - **pinch**: Touch surface with two fingers and bring them closer together
  - **double tap**: Rapidly touch surface twice with fingertip

- **Adjust view (zoom out)**
  - **spread**: Touch surface with two fingers and move them apart
  - **double tap**: Rapidly touch surface twice with fingertip
Related Work

- **Appcessory**
  - Compound word of (app + accessory)
  - An appcessory is a smart phone accessory that is combined with a specially written app to perform a useful function.
Proposed Solution

- MAG Ring

Attach copper tape at both ends of the ring to detect information of the ring such as diameter, area, and rotation.

A prototype made with 3D printer
Proposed Solution

- When the ring touch a screen, an area inside the ring is expanded.
- Zooming in if the ring is rotated clockwise, Zooming out, if the ring is rotated counterclockwise.
Proposed Solution
Experiment Condition

• Material
  – MAG Ring, Smartphone

• Condition
  – 20 participants (10 males and 10 females, over 50 years old)
  – 2 modes X 2 types of contents
    • MAG Ring mode vs. Pinch Zoom mode
    • Text vs. Picture
## Experiment Condition

### Comparison

<table>
<thead>
<tr>
<th>Expanding Range</th>
<th>Touch Gesture Zoom</th>
<th>MAG Ring</th>
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</thead>
<tbody>
<tr>
<td>Strength</td>
<td>It is built in smartphones</td>
<td>Users can recognize where he/she is watching in the display. It is easy to manipulate.</td>
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<tr>
<td>Weakness</td>
<td>Users cannot see the composition of a screen. Relatively many number of touch.</td>
<td>It is a separate appcessory.</td>
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</tbody>
</table>
Future Work

• Experiment
• Analysis
• Conclusion
• Discussion
Thank You