In the case of densely placed exhibits in museums, How to support visitors more easily access exhibit information?

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ABSTRACT

There is a research gap on how AR markers could be placed to support visitors accessing exhibit information easily in the background of densely placed exhibits. This research investigates how AR markers can be placed in size, horizontal/vertical spacing, height, and the number of information contained by AR markers in the case of densely placed exhibits based on the usability of markers and user satisfaction, with a mixed-methods study of eye tracking research and questionnaires.

INTRODUCTION & BACKGROUND

Primary Research in Museum: Densely Placed Exhibits

Distance between the text labels and the actual exhibits lead to a negative experience in getting information about the exhibits.

Current Solution: Augmented Reality in museum

By attaching virtual information to physical exhibits, it is possible to cross spatial boundaries and display exhibits and corresponding text labels in the same vision.

METHODOLOGY

Eye Gaze Research

Collect & Analyse scanning durations and mis-scan times

Questionnaire

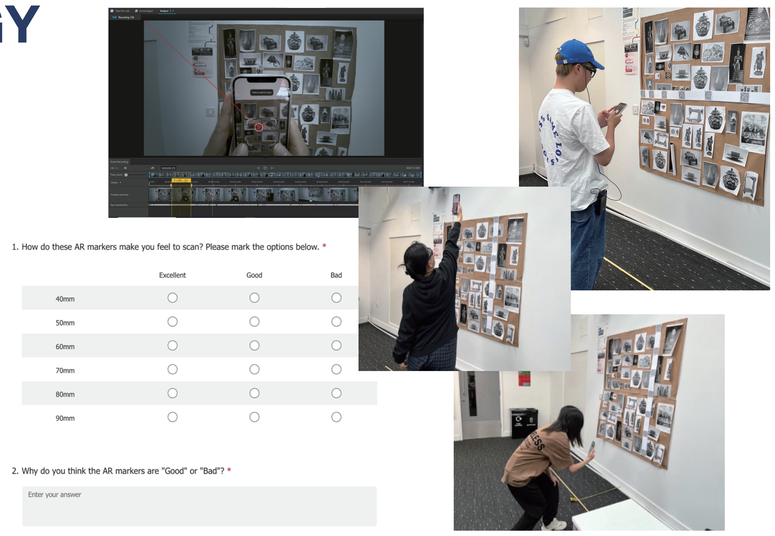
Collect user satisfaction levels

Scenario Height & thickness

The simulation of Horniman Museum's cabinets

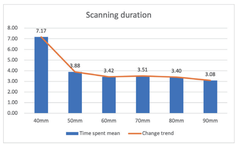
Participant 20-25 years old

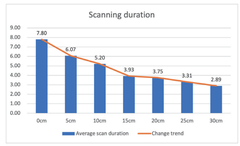
Museum visiting experience:
Needs of learning about exhibits

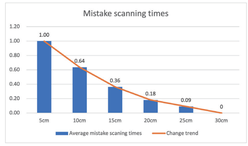


TESTING & EVALUATION

Size: The participant scans AR markers with lengths of 4, 5, 6, 7, 8, 9cm separately. The scanning duration and user satisfaction for each marker are recorded.

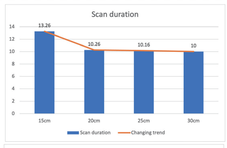


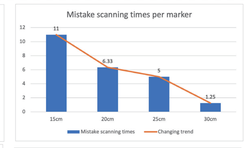


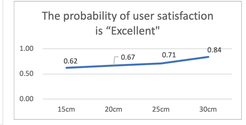


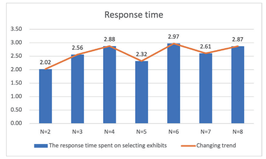
Horizontal Interval: The participant scans AR markers with horizontal intervals of 5, 10, 15, 20, 25, 30cm separately. The scanning duration for each marker, the mis-scan times and user satisfaction for each interval are recorded.

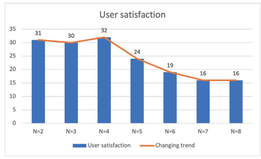
Vertical Interval & Height: The participant scans AR markers with vertical intervals of 15, 20, 25, 30cm separately. The scanning duration for each marker, the mis-scan times for each interval, and the user satisfaction for each interval and height are recorded.











Number of AR Contents: The participant separately scans AR markers containing 2, 3, 4, 5, 6, 7, and 8 AR buttons which link to the text introduction of target exhibits. The reflecting duration and the user satisfaction for each marker are recorded.

RESEARCH RESULTS

In the context of densely placed exhibits in museums, AR markers are recommended to be placed by:

Size: 6 to 7cm in length **Horizontal Interval: > = 15cm** **Height: 112-173cm**

Vertical Interval: > = 25cm **Number of AR buttons: 2 to 4**

CONCLUSIONS & FURTURE WORK

The research results provide a recommendation of numerical ranges for museums to place AR markers in densely placed exhibits. Future researchers can further study the usability of AR markers based on the lab test results in the actual museum scene.