User-Defined Game Control with Smart Glasses in Public Space

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ABSTRACT
Without specific game controller and direct-touch, game control on Smart Glasses differs with existing console and mobile games. Although current game control set on Smart Glasses is explored by developers based on system limitation, the set is not reflective of user behavior. To create better game control, we presented an user-defined game control study in public space to collect user behavior. In all, 2448 game controls from 24 participants were logged, analyzed, and paired with think-aloud data for 17 commands performed with 3 interaction methods (On-Body, In-Air and Phone) and 2 glasses forms (Google Glass and Epson BT-100). Our findings indicate that users choose area relatively unobtrusive to perform the game control, and glasses form does influence how users creates game control. We also present a complete user-defined game control set with agreement scores and taxonomy. Our results will help designers create better game control sets informed by user behavior.

Author Keywords
Guides; instructions; author's kit; conference publications; keywords should be separated by a semi-colon.
Optional section to be included in your final version, but strongly encouraged.

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INTRODUCTION

RELATED WORK

Game Control

Glass Input

Gaming in Public Space

User-Defined Gesture

DEVELOPING A USER-DEFINED GAME CONTROL SET

Overview and Rationale

Game Task Set

Participants
We recruited twenty-four participants from the general public for our study. Twelve were female. Average age was 23.2 (*sd* = 2.72). All participants are right-handed and none of them had used a Smart Glass. About their gaming experience, according to our investigation, most participants play games at least one time per week (see Figure 2). It takes 1.36 hours (*sd* = 0.89) for participants to play games a time. Moreover, 58% of them indicated that their main gaming platforms were on mobile phones, 38% were on PCs, and only 4% were on consoles (see Figure 1). Another important factor of gaming experience is the familiarity of game controllers. The result showed that, compared with joysticks, most of them were more familiar with keyboards, mouses and touch screens (see Figure 3).

Glass Forms

Interaction Methods

Procedure

RESULTS
Our results include game control taxonomy, the user-defined gesture set, user rating, subjective responses, and qualitative observations for each interaction methods().

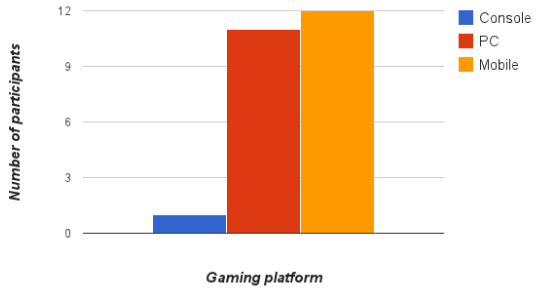

Figure 1. With Caption Below, be sure to have a good resolution image (see item D within the preparation instructions).

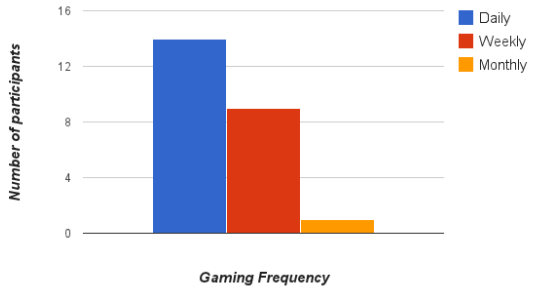

Figure 2. With Caption Below, be sure to have a good resolution image (see item D within the preparation instructions).

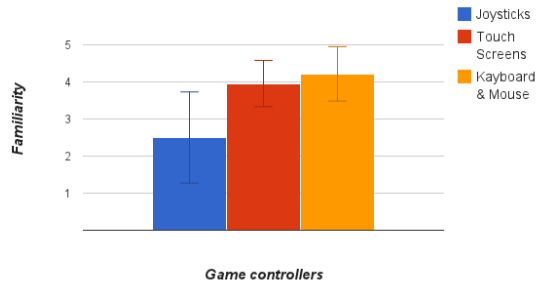

Figure 3. With Caption Below, be sure to have a good resolution image (see item D within the preparation instructions).

Preference Between Interaction Methods

Behavior with Different Glasses Forms

Classification of Game Controls

User-Defined Game Control Sets

Agreement
Conflict and Coverage
Properties of the User-defined Gesture Sets
Taxonometric Breakdown of User-defined Game Controls

Mental Model Observations

Social Acceptance and Control Area
Metaphor from Exisiting Game Control

DISCUSSION

Users' and Designers' Gestures
Implications for In-Air Gesture Technology
Implications for On-Body Input Technology
Implications for User Interfaces
Limitation and Next Steps

CONCLUSION

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REFERENCES