**Exploring the Effects of Gaze Awareness on Multiplayer Gameplay**

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This research explores the effect of gaze awareness by making gaze visible during gameplay in two multiplayer settings: remote and co-located. Gaze awareness happens naturally in traditional games (e.g., board and card games) typically to infer intention and potential strategies of another player. By making gaze explicit, players can gain better insights thus potentially changing the dynamics of gameplay and affording new gameplay experiences.

**Motivation**

Players tend to monitor the gaze of one another throughout gameplay in search for signals given away by the eyes [1]. Gaze, a strong indicator for intention, allows users to infer potential strategies of opponents. Analysis from an exploratory pilot study using a wearable eye tracker showed us interesting behavioral patterns. We found a lack of investigation specifically on social gaze behaviors in multiplayer games and none about the effects of gaze awareness during gameplay which motivated us to explore this domain further.

**Outcomes**

This research seeks to understand whether gaze awareness has any effect on gameplay such as on player’s strategies. We further intend to demonstrate how gaze can be used differently to create new social experiences (e.g., deception) in multiplayer environments. Such questions include: How does mutual gaze awareness affect gameplay? How can gaze made explicitly visible be used to create new social gameplay experiences? Does the exposure of gaze lead to emotional responses? What gaze visualization would work best?

**Background**

Related works have shown that adaptive AI can change aspects of the game based on a player’s eye movements and strategies to enable positive gameplay experiences [4] or by implementing social gaze signals to increase immersion [3]. In a similar fashion, human players can make real-time gameplay adaptions once gaze information is made visible. Multiplayer games require continuous thought processing and frequent changes to strategies. By making gaze visible to all players through visualizations, a 'shared awareness' is created.

**Study Design**

We designed two studies to determine the effects of gaze in both traditional board game and computer versions of Ticket to Ride. The gameplay involves a mixture of short and long term goals in which players must try to hide from their opponent. By making gaze explicit in both settings, we believe the results will be different and comparisons will be drawn accordingly, testing the effects of the play setup and gaze visualizations under a number of conditions where applicable.

**Conclusions**

By making gaze explicit and aware to players in multiplayer gaming environments, we have opened up numerous questions with regards to its effects upon gameplay. Such aspects include the types of gaze visualizations employed and the differences between gaze awareness in co-located remote gameplay. The results from this work hope to provide new insights and experiences for both multiplayer games and contribute towards the emerging field of EyePlay [2].

**References**


