Visualization of Gaze Transition Matrix

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Abstract
This report gives a brief description of Gaze Transition Matrix which is formed as a result of gaze transitions made by a person between different Areas of Interests(AOIs) on a web page. The gaze data was collected from the Tobii Eye Tracker and was analysed using Matlab.

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Introduction

Fixation Index and AOI(Area of Interest) gives the most valuable information for recording behavioral patterns of the person navigating the real world. In this assignment, the gaze pattern data of the person navigating a website was provided. The webpage consisted of 9 areas of interests. Thus, the gaze pattern between these 9 areas was expected using a Gaze Transition Matrix Visualization. As a result, the visualization provided useful information about behavioral pattern, and was found to be reliable using Chi square tests.

Method

A Matlab script for analysing eye tracking data and updating a Gaze Transition Matrix was developed using Matlab tool version R2014b. The script was divided into 7 segments as follows: 1. Load and initialize the data: eyetrackingdata.tsv 2. Extract relevant columns 3. Initialize matrices for operations 4. Extract Fixation Data 5. Create Fixation Mapping Matrix 6. Update the Gaze Transition Matrix with Transition Data 7. Visualize The GTM Matrix with 3D Mesh View and Grey Scale Grid View.

Results and Conclusion

The Gaze Transition Matrix was updated with varying intensities for different gaze patterns. Following visualizations shows how such information could be useful in finding useful insights about the gaze data. Figure 1 shows the Grid View of the gaze pattern. The most intense black region shows how frequently the user fixed the eye gaze between the corresponding row and and column. Figure 2 shows the mesh view of the gaze pattern. The peaks of the mesh mountains show high and low intensity areas. Overall, the gaze patterns showed that the user dominantly fixed the eye gaze on the payment section of the website, which is the transition between AOI 7 and AOI 5.

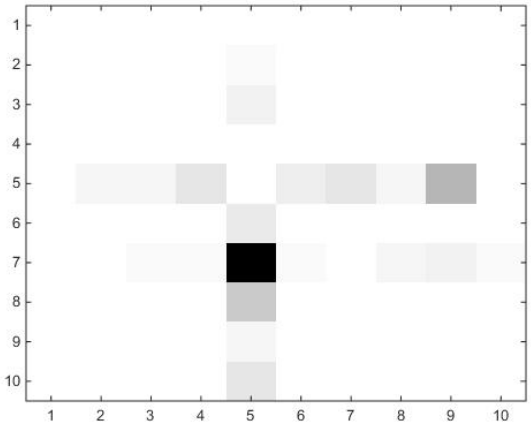

Figure 1. GTMGridView.jpg

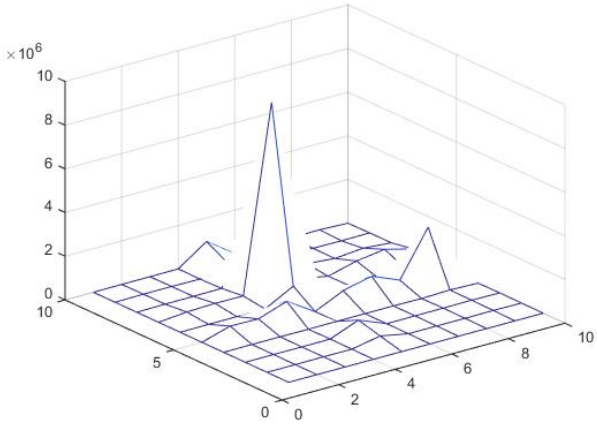

Figure 2. GTMMeshView.jpg