

Multiscale Scanpath Visualization and Filtering

Supplemental Material

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1 INTRODUCTION

In this supplemental material, we present two alternative approaches that deal with the topic of aggregation and knowledge discovery of eye-tracking data. For these purposes, both techniques utilize grids.

In order to extract behavioral rules from eye-tracking data, Burch (2017) used data-mining techniques and projected scanpaths onto a coarse spatiotemporal grid. It is possible to use either a uniform grid or an adaptive grid with varying cell sizes. This is shown in Figure 1(a). Based on transitions between AOIs, respectively grid cells, transitions rules are generated and visualized in combination with confidence values. This is depicted in Figure 1(b).

In order to represent time and space simultaneously, Netzel and Weiskopf (2016) have introduced Hilbert attention maps. Here, uniform grids are used. An ID is assigned to each grid cell. The order in which the cells are traversed is defined by a Hilbert space-filling curve. Examples of Hilbert attention maps for the data sets used in the main article are depicted in Figure 2.

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¹www.robinworldwide.com

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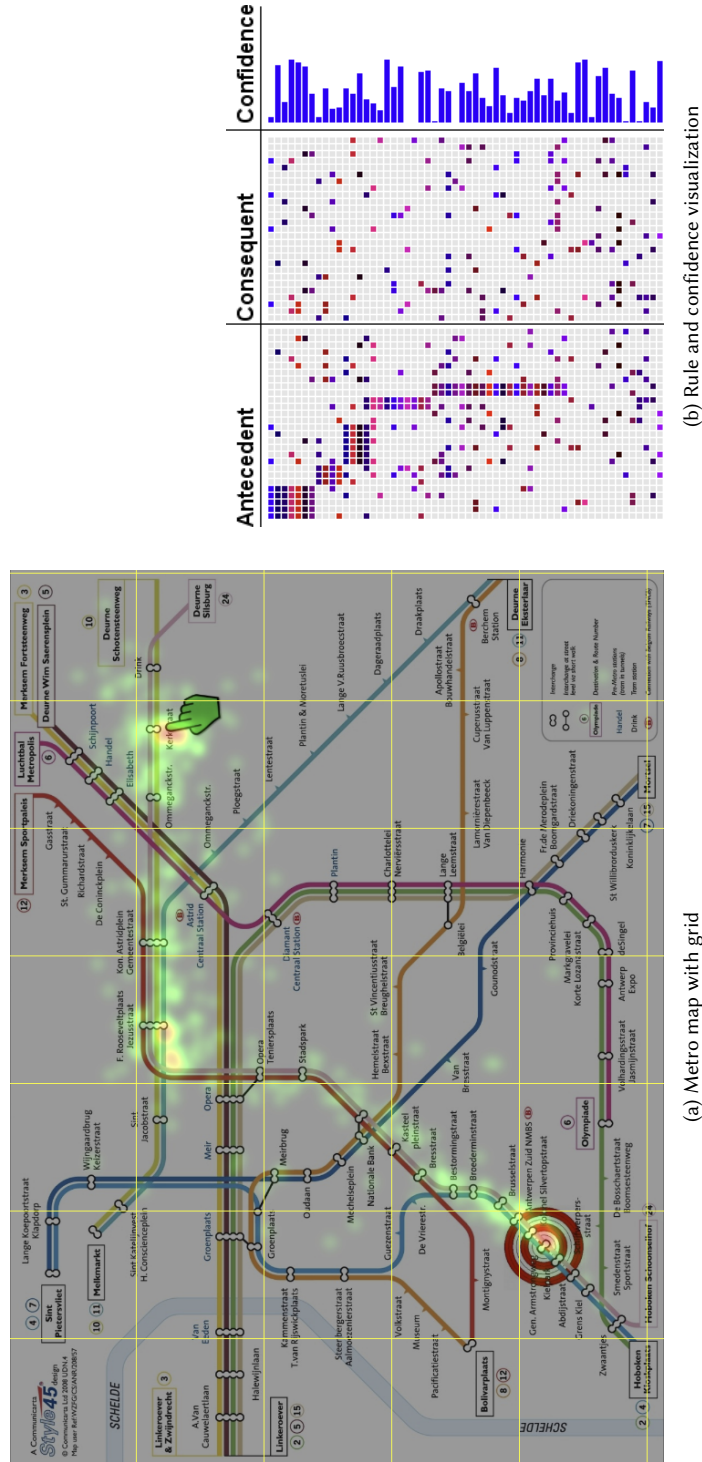
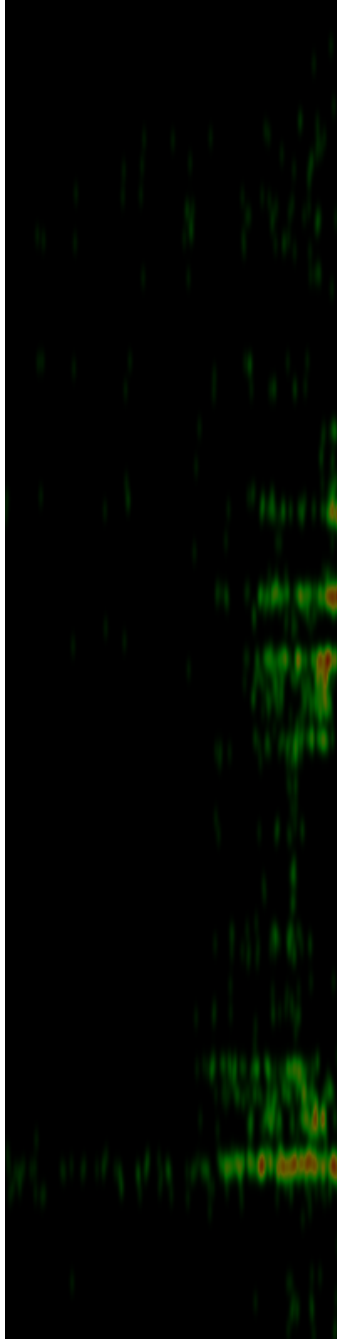
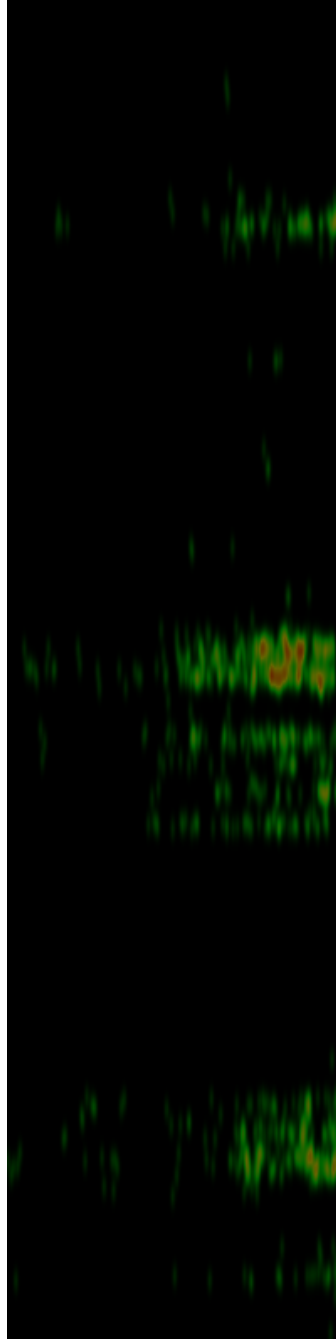


Fig. 1. Images of the method described in *Mining and Visualizing Eye Movement Data* [Burch 2017]. (a) shows a metro map with a superimposed uniform grid. (b) depicts the transition rule visualization and confidence.



(a) Venice, Italy



(b) Frankfurt, Germany

Fig. 2. *Hilbert attention maps* [Netzel and Weiskopf 2016] for the same data sets as used in the main article. The x-axis encodes indices of grid cells and thereby a spatial position. The y-axis represents time. Red hotspots indicate spatio-temporal synchrony of the eye-tracking data. (a) represents the data used in Figure 1 in the main article. (b) represents the data used in Figure 4 of the main article. The grid cell size was 20×20 pixels in both cases, yielding a total of 64×64 cells.