

Eye-tracking evaluation of the effect of hill-shading on tourist maps

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Abstract:

The paper is focused on eye-tracking evaluation of two variants of Czech online tourist maps. Terrain in the first type of maps was depicted with contour lines and elevation points only. In the second type of maps, visualization was enhanced by hill-shading. The purpose of the case study was to evaluate if the hill-shading helps users with better imagination of the terrain.

Total of 40 respondents were participating in the eye-tracking study. SMI RED 250 eye-tracker with sample frequency of 120 Hz was used. Apart from eye-tracking data, also video of participants during the task solving was recorded. The experiment was complemented with a short questionnaire focused on users subjective opinion about suitability and aesthetics of both map types.

The task was to find out one particular place (village or peak) in the map as fast as possible and mark it with the mouse. Two aspects were investigated - if hill-shading helps users to find the peak, and at the same time, if the hill-shading make it more difficult to find the village.

The data were statistically analysed with the use of Wilcoxon rank sum test. Four eye-tracking metrics were investigated - Time to Answer, Fixation count, Fixation duration and Scanpath length. The visual analytics of data were performed too.

The results of the study will answer the question, if hill-shading used in tourist maps helps users to better perception of the terrain.