Abstract

Many people with visual impairments do not read Braille and have problems interpreting tactile information. Some of them have enough residual vision so that if streets and their names were presented in the proper color, size, and style, they could benefit from customizable large print maps. Such maps would allow people with low vision to study a new area, pre-plan travel, and have portable maps to consult while navigating unfamiliar areas. This paper presents an algorithm for placing street names on street maps produced by the Tactile Map Automated Production (TMAP) software in the Scalable Vector Graphics (SVG) format.

SVG Map Labelling Problem

Part of the SVG map of downtown Chicago that the algorithm takes as input described in the paper. It contains the street lines but no street names. The street names are given as attributes of street segments in the SVG file and are not properly placed.

Algorithm: Step 1 – Aggregate Street Segments

Algorithm: Step 2 – Compute Label Regions

Algorithm: Step 3 – Reduce the Label

Algorithm: Step 4 – Score Candidate Label Positions

Algorithm: Step 5 – Shift Candidate Label Positions

Results

Part of the SVG map of downtown Chicago generated by the algorithm described in the paper. The streets form a grid of lines. The street lines are in red, the street names are in green. The street line widths and colors, the font style, size, and color can be changed by the user.

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