A Design and Implementation of the Digital Annotation Basis on an Image Resource for a Touch Operation

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This paper describes a user interface design and implementation to make the position of letters and line series in digital images of historical documents selectable like text lines of an electronic book. The aim is to prepare a basis by which a tablet device can be used to make a large quantity of electronic annotations.

At first, a “flow” concept, “Primitive Lead,” was found as a basic and tacit property of letter images by analyzing electronic annotations, marker tools for electronic book applications and the layout of letters in image resources. Primitive Lead links the layout of letters in an image with text data.

Then, from the Primitive Lead concept, an electronic annotation basis for pseudo and virtual text data lines, “Vein,” was designed. This annotation basis has the following characteristics: (1) It provides a restricted touch-and-select user interface; (2) It becomes a template by which to generate annotations itself; (3) It can support the writing layouts of each language, such as top to bottom or left to right; (4) It is compatible with various line layouts using SVG in HTML5; (5) It allows continuous selection of multiple lines; (6) It is a simple data structure for creating data by hand.

Finally, from the design of the general purpose data model, a prototype program of the above design model was implemented using HTML5, CSS3 and JavaScript. The usefulness of the prototype’s user interface was then verified using a web browser on a touch-screen tablet device and on a conventional mouse-operated personal computer, and any user interface problems were investigated. The JavaScript core-application code and the URL of a guide to the Primitive Lead editing tool, with sample, are included in the appendix.

Key words: Image, Annotation, Touch Device, User Interface