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Gaze behavior in a review-a-definition task

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Abstract

A requirement definition document (RDD) in software development should define the necessary and sufficient condition for the software to satisfy. It is preferable to review and guarantee the quality of the RDD. It is, however, not easy to evaluate the goodness of the reviewer, due to various review styles and the logical complexity of such a document. Therefore, we developed a test set for the review task of the RDD and investigated the reviewers gaze behavior. The test set includes the four logical relationships between the definition and instances, and our analysis revealed that validation of the necessary condition is relatively easier than validation of the sufficient condition. Moreover, reviewers gaze patterns were concentrated more on a certain part of sentences when the review was successful. It may suggest that the review success can be predicted by the reviewing eye gaze fixations on sentences with the relatively higher information gain.