

Hybrid Document Matching Method for Page Identification of Digilog Books

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Abstract. *Digilog Books* are AR (Augmented Reality) books, which provide additional information by visual, haptic, auditory, and olfactory senses. In this paper, we propose an accurate and adaptive feature matching method based on a page layout for the *Digilog Books*. While previous *Digilog Books* attached visual markers or matched natural features extracted from illustrations for page identification, the proposed method divides input images, captured by camera, into text and illustration regions using CRLA (Constrained Run Length Algorithm) according to the page layouts. We apply LLAH (Locally Likely Arrangement Hashing) and *FAST+SURF* (*FAST* features using *SURF* descriptor) algorithm to appropriate region in order to get a high matching rate. In addition, it merges matching results from both areas using page layout in order to cover large area. In our experiments, the proposed method showed similar matching performance with LLAH in text documents and *FAST+SURF* in illustrations. Especially, the proposed method showed 15% higher matching rate than LLAH and *FAST+SURF* in the case of documents that contain both text and illustration. We expect that the proposed method would be applicable to identifying various documents for diverse applications such as augmented reality and digital library.

Keywords: Document matching, augmented reality, Digilog Book, page identification.