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comparison with the k-NN classifiers based recognition method, DNRBM reveals better recognition accuracy.

Table 3. Recognition accuracy for the k-NN classifiers based recognition method

k	Weighted voting		Simple voting	
	Features (X_0~X_{26})	Features (X_0~X_{28})	Features (X_0~X_{26})	Features (X_0~X_{28})
1	0.8950	0.9150	0.8950	0.9150
2	0.8950	0.9150	0.8850	0.8925
3	0.8825	0.8975	0.8850	0.8875
4	0.8875	0.8875	0.8825	0.8625
5	0.8775	0.8925	0.8575	0.8750

5. Conclusions

The contribution of this paper is fourfold. First, an effective approach is proposed to locate the character in a degraded gray image. Secondly, this work has proved that using logistic regression to obtain a reduction in the number of features is effective. Thirdly, this work has used both statistic and structural features, and experimental results highlight that integrating various features of objects for recognition is usually a good idea. Finally, this work indicates again that the measure of *n*-dimensional medium truth degree is suitable for multi-class classification for its scalability[15], and moreover, classification based on MMTD performs well when only a small number of samples available for training. We plan to work on the proposed method DNRBM further to promote the recognition accuracy by designing more simple and useful features, as well as by designing more intelligent algorithms to distinguish foreground from background, to rotate images more adaptively, to wipe off mottles, and to refine results of fuzzy classifiers to make a final decision.

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