WORD RECOGNITION METHODS THROUGH WORD SHAPE CODING TECHNICS COMPARISON

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ABSTRACT

The aim of this work is to recognize words through their shape. Two methods have been studied and modified to improve the results: holistic word recognition[1] and retrieval of machine-printed Latin documents through word shape coding[2].
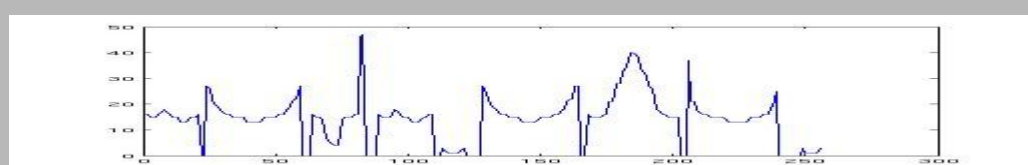
METHODS

Holistic Word Recognition: Original Method

Normalize image -> scalar feature extraction: wide, height, ratio, area, ascenders and descenders number, **3 profile feature vectors extraction-> Normalize vectors using FFT**:
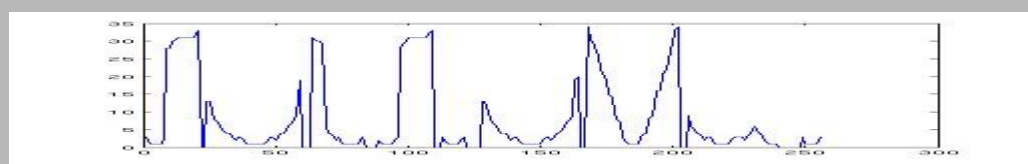
1) Projection Profile
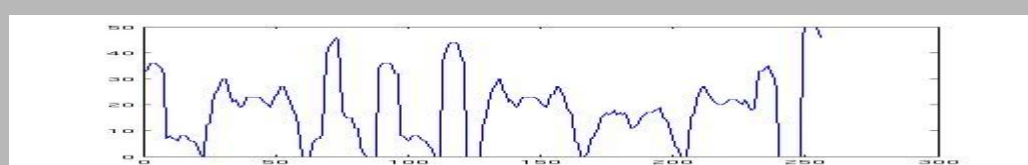
2) Upper Boundary Profile

3) Lower Boundary Profile

Features vector:

**V0=scalar features+ 3 profile features normalized (size 27)**

Holistic Word Recognition: Modified Method

Four statistical moments were added to the previous descriptor V0:

V1=[V0]+ 4 statistical moment for each of the 3 previous profile vectors (size 39)

Retrieval through word shape coding: Original Method

Normalize image -> feature extraction: extrema points, number of word cuts with predefined lines. In this case, with central line -> Normalize size.

xline
palabra → 222323222
→ 1222222
baseline   122323222|10   numCuts
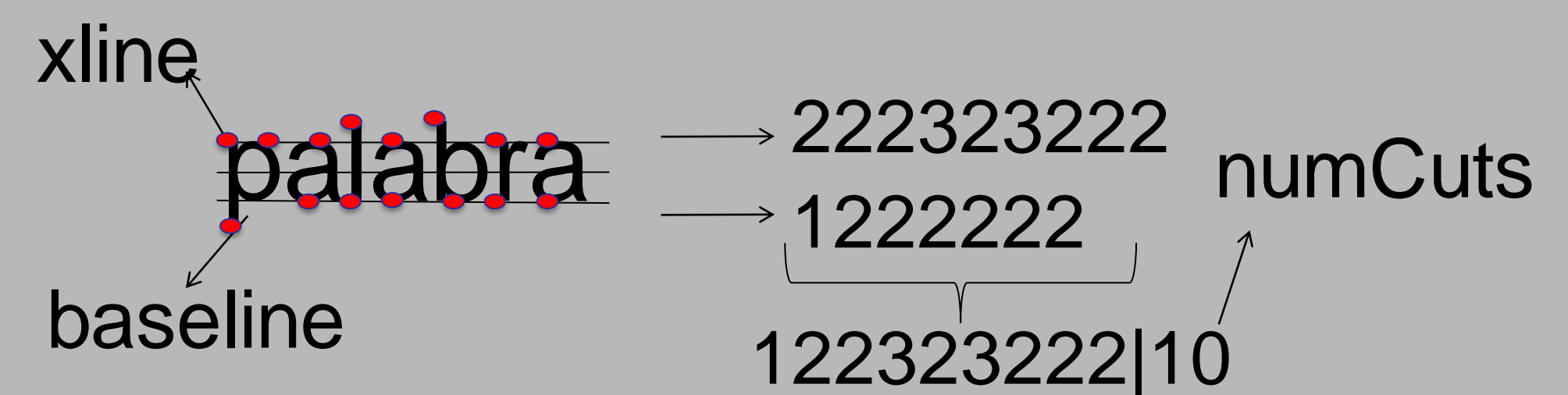
Features vector:

V0= extrema points clasification + numCuts with central line

### Retrieval through word shape coding: Modified method

Word cuts with two lines added to the descriptor. The number of cuts is set to 1 or 3 if it's bigger or smaller than the number of characters respectively:

V1= extrema points clasification + numCuts with superior line + numCuts with inferior line.

DATASET: 10 images for each of the following ones

Cabello	Apple / CASINO	Placebo	Recebo	Signal	Palabra
LOVE	Night / linux	Caballo	Carallo	Macabra	playa / SALE
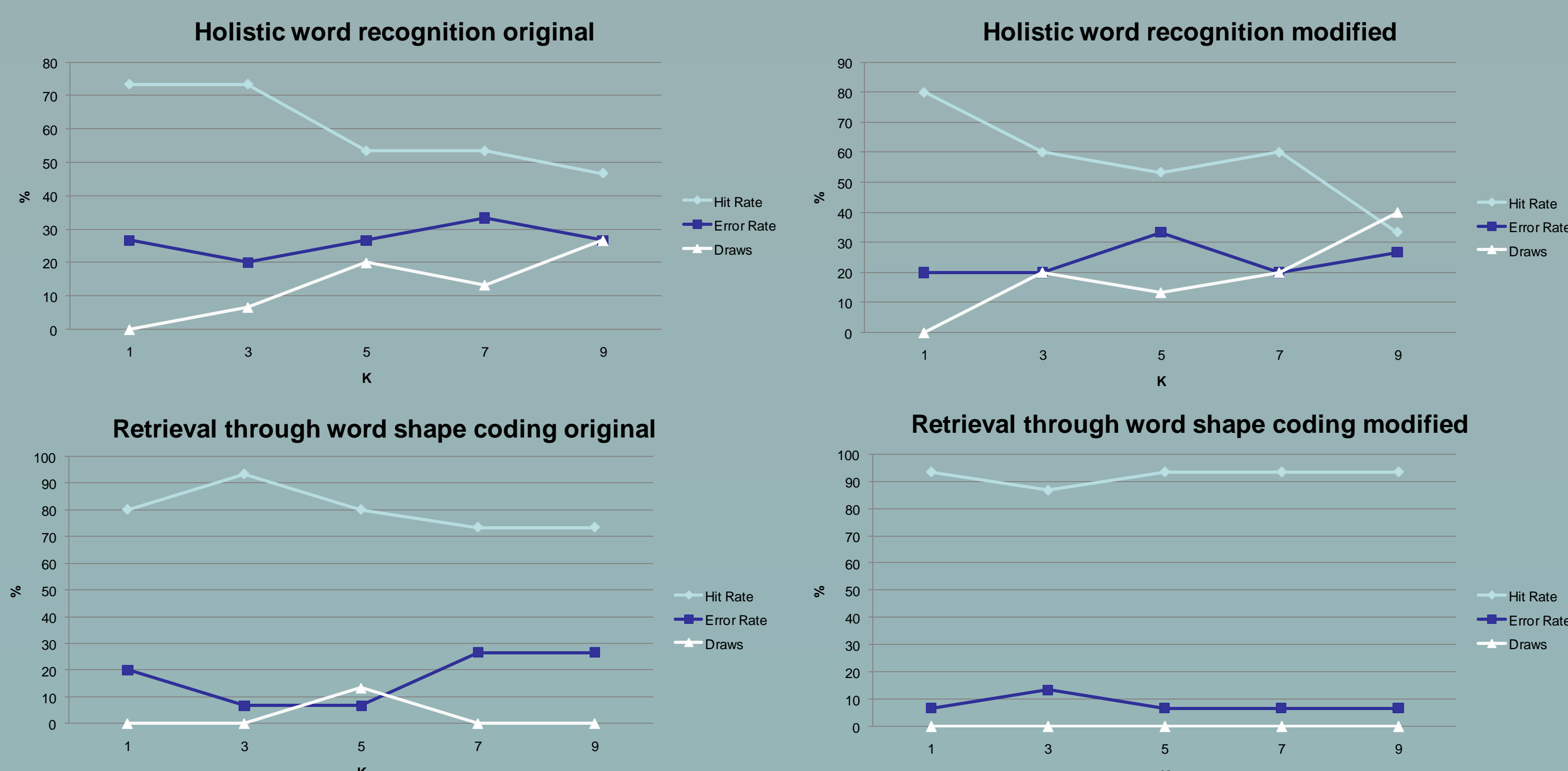
CONCLUSION

Two word recognition methods through word shape coding were improved obtaining a 80% success rate against the initial 73.33% for the first method and 93.33% for the second method. Our proposal also obtains lowers error rates and draws.

RESULTS

Holistic word recognition original

Holistic word recognition modified

Retrieval through word shape coding original

Retrieval through word shape coding modified

ACKNOWLEDGEMENT

REFERENCES

[1] V. Lavrenko, T.M. Rath, and R. Manmatha Holistic word recognition for handwritten historical documents. In Document Image Analysis for Libraries, 2004. (16) 278-287.

[2] Lu, Shijian and Tan, Chew Lim. Retrieval of machine-printed Latin documents through Word Shape Coding. In Pattern Recognition, 2008. (41) 1816-1826.