

# SUPPLEMENTAL MATERIAL OF “MORPHOLOGICAL ANALYSIS OF CELLS BY MEANS OF AN ELASTIC METRIC IN THE SHAPE SPACE”

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## ABSTRACT

Some Figures and Tables with results from “MORPHOLOGICAL ANALYSIS OF CELLS BY MEANS OF AN ELASTIC METRIC IN THE SHAPE SPACE” are shown.

Keywords: geodesics, planar closed curves, shape space, SRVF, elastic metric, erythrocyte deformation.

## RESULTS

Please, see the main manuscript text for details about the following results.

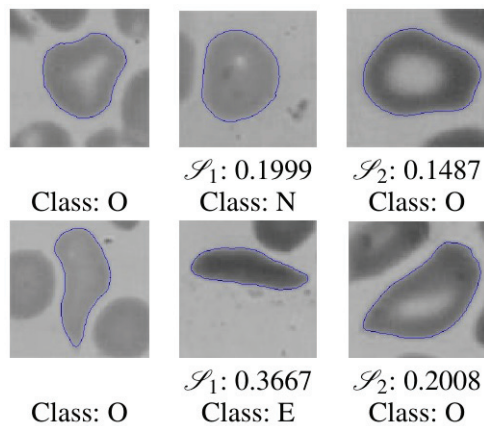


Fig. S1. Examples of cells with other deformations misclassified in  $\mathcal{S}_1$  that are correctly classified in  $\mathcal{S}_2$ .

Table S1. Results obtained with Younes et al. Classes N: Normal, S: Sickle, O: Other Deformations.

Supervised classification							
	Confusion Matrix			Measures			
	N	S	O	TPR	TNR	P	F1
N	198	0	2	0.99	0.95	0.90	0.94
S	0	192	8	0.96	0.98	0.97	0.96
O	21	6	173	0.86	0.98	0.94	0.90
Classification using templates							
	Confusion Matrix			Measures			
	N	S	O	TPR	TNR	P	F1
N	195	0	5	0.98	0.96	0.93	0.95
S	0	190	10	0.95	0.98	0.95	0.95
O	14	9	177	0.88	0.96	0.92	0.90

Table S2. Performance measures for: (1) supervised classification, (2) classification using templates.

	$\mathcal{S}_1$		$\mathcal{S}_2$	
	F1-M	Acc	F1-M	Acc
(1)	0.93	0.93	0.94	0.94
(2)	0.92	0.92	0.94	0.94

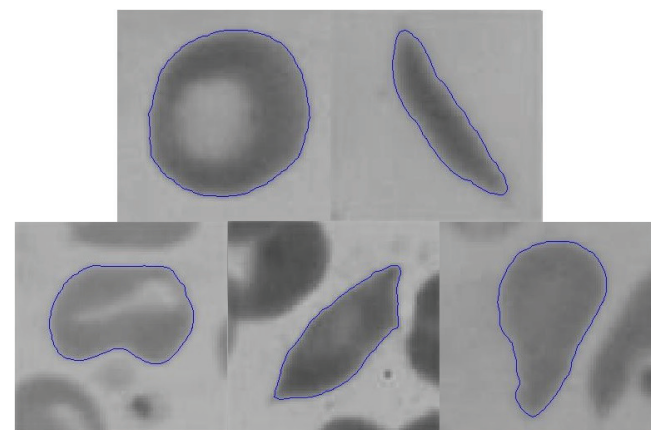


Fig. S2. Medoids of each class obtained for  $k=5$ : Normal and Sickle classes above, the three classes of Other Deformations below.

Table S3. Results of supervised classification in the feature space:  $W(\phi)$  weighted generalized support function (Gual et al., 2013),  $C_p(\phi)$  Crofton descriptor (Gual et al., 2015).

	Confusion Matrix			Measures		
	N	S	O	TPR	TNR	P
	$W(\phi)$					
N	197	0	5	0.97	0.99	0.98.
S	0	202	8	0.96	0.98	0.97
O	5	7	199	0.94	0.95	0.94
	$C_p(\phi)$					
N	198	0	4	0.98	0.99	0.98
S	0	205	5	0.98	0.97	0.95
O	4	11	196	0.93	0.9	0.96

## REFERENCES

- Gual-Arnau X, Herold-Garcia S, Simó A(2013). Shape description from generalized support functions. *Pattern Recogn Lett* 34:619-626.
- Gual-Arnau X, Herold-Garcia S, Simó A(2015). Erythrocyte shape classification using integral-geometry-based methods. *Med Biol Eng Comput* 53:623-633.