Skin Lesion Classification Using Manually Extracted Features and a Deep Learning Based Approach

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Abstract—**In this report corresponding to the Masters course Intelligent Systems in Medicine we present our ...**

I. Introduction

blabla skin lesion blabla ISIC challenge blabla 7-classes blabla 2-classes

II. Dataset

HAM dataset:

A. 7-Classes

melanoma (MEL), melanocytic nevus (NV), basal cell carcinoma (BCC), actinic keratosis (AK), benign keratosis (BKL), dermatofibroma (DF), and vascular lesion (VASC).

B. 2-Classes

benign (BEN), malignant (MAL)

III. Metrics

A. 2-Classes

B. 7-Classes

IV. Phase I

Manually Extracted Features

A. Feature Extraction

1) Image Segmentation:
2) Color:
3) Texture:
4) Shape:
5) Legendre Moments (FS): the calculation of moments are used to have pattern features which are invariant with respect to change of size, translation and rotation [1].

B. Feature Selection

1) Robustness Towards Hair Occlusion:
2) Unvarite Feature Selection:
3) Select From Model:

C. Models

1) Support Vector Machines:
2) Decision Tree Classifier:
3) Random Forest:

V. Phase II

Deep Learning Approach

A. Preprocessing

1) Data Augmentation and Normalization:

B. Models

C. Training

VI. Evaluation

VII. Results

VIII. Discussion and Conclusion

Acknowledgment

References

[1] T. Arif, Z. Shaaban, L. Krekor, and S. Baba, "Object classification via geometrical, zernike and legendre moments." *Journal of Theoretical & Applied Information Technology*, vol. 6, no. 3, 2009.