Review: Conformal Prediction for Automatic Face Recognition

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1 Paper Profile

- Title: Conformal Prediction for Automatic Face Recognition
- Author: Charalambos Eliades, Harris Papadopoulos
- Organisation: Computer Science and Engineering Department, Frederick University
- Publish Year: 2017
- URL: http://proceedings.mlr.press/v60/eliades17a/eliades17a.pdf

2 Prerequisites

- SIFT(Scale Invariant Feature Transformation): a method for extracting distinctive invariant features from images that can be used to perform reliable matching between different views of an object or scene. It has been introduced by Lowe(2004) [1]
- Feature Extraction from Images: good blog entry
  http://robonchu.hatenablog.com/entry/2017/08/08/220905
  https://qiita.com/icoxfog417/items/adbbf445d357c924b8fc

3 Contents in the paper

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4 Abstract

They have investigated the use of combination of CP with SIFT in a domain of Automatic Face Recognition(AFR). Particularly speaking, they have combined CP with two classifiers based on calculating similarities between images using *SIFT* features. Then they have examined the performance of the classifiers with the given data sets, which are ATT Faces and UFI Corpus subset.

5 Proposal

They have examined the combination of NCM(non-conformity measure) with SIFT to detect the faces of the people. Although the author did not mention about what TCP stands for, they conducted the experiments to verify the accuracy of their approach, which is AFR-TCPs.

6 Paper Structure

In Section 2 we provide an overview of related work on AFR and of previous work on obtaining confidence information for the particular task. Next, Section 3 gives a brief description of the general CP framework. In Section 4 we concentrate on the usage and calculation of SIFT features, while in Section 5 we discuss the two AFR techniques used as basis for the CPs proposed in this work. Section 6 details the developed NCMs and completes the description of the proposed CP approaches. Section 7 reports and discusses our experimental results. Finally, Section 8 gives our conclusions and plans for future work.

7 Conclusions

Unlike most existing AFR approaches that output only a single prediction, the proposed CP approaches complement each of their predictions with probabilistically valid measures of confidence. According to their experimental results, the proposed approaches were sufficiently compatible with the conventional approaches.

References

[1] David G Lowe. "Distinctive image features from scale-invariant keypoints". In: *International journal of computer vision* 60.2 (2004), pp. 91–110.