Markov Chain-based Art Authentication Modeling with Convolution Neural Network

Mao Hui[†], Pai Chet Ng[†]

[†] Department of Electronics and Computer Engineering,
Hong Kong University of Science and Technology

May 22, 2017

Preface

This ppt serves to present some of the results which might not include in the main paper due to page constraint.

Motivation toward Art Authentication

Even though the connoisseur can reach a conclusion regarding the authenticity of an artwork with their profound knowledge;
often, their judgement might prone to error in consequences, undoubtedly, lead to controversial artwork in which further effort is required to authenticate a genuine artwork.
The active involvement of researchers in art authentication has lead to an extensive development of image processing systems to distinguish the forgery from the genuine artwork.

Dataset

Raphael's dataset provided by Prof. Wang Yang consists of 35 artworks:

- 18 are genuine works of Raphael,
- 10 are known as forgeries,
- and 7 are disputed

SURF and HOG

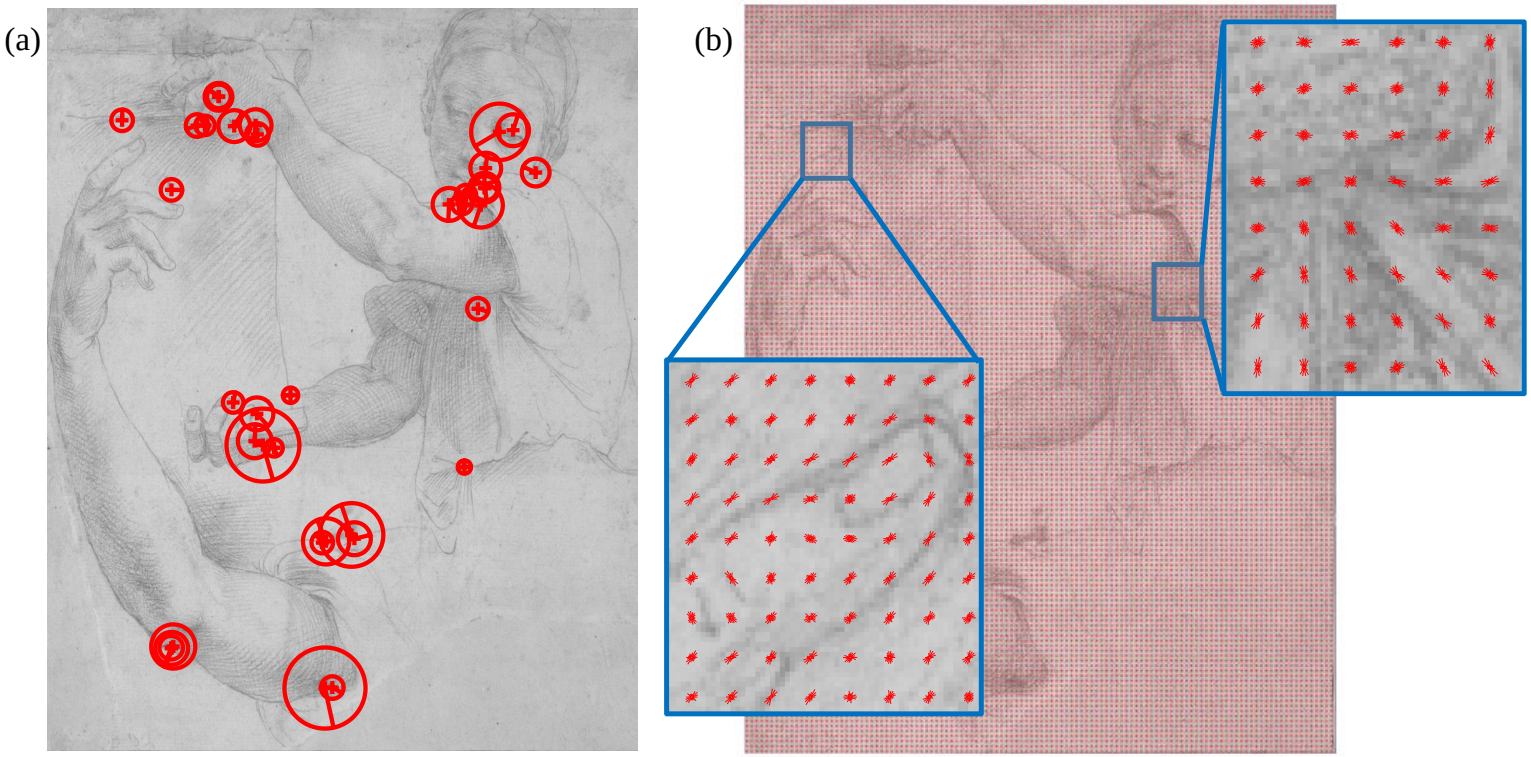

Figure: The 10 strongest features of (a) SURF. The gradient vector of HOG is shown in (b).

Architecture of Convolution Neural Network for Feature Extraction

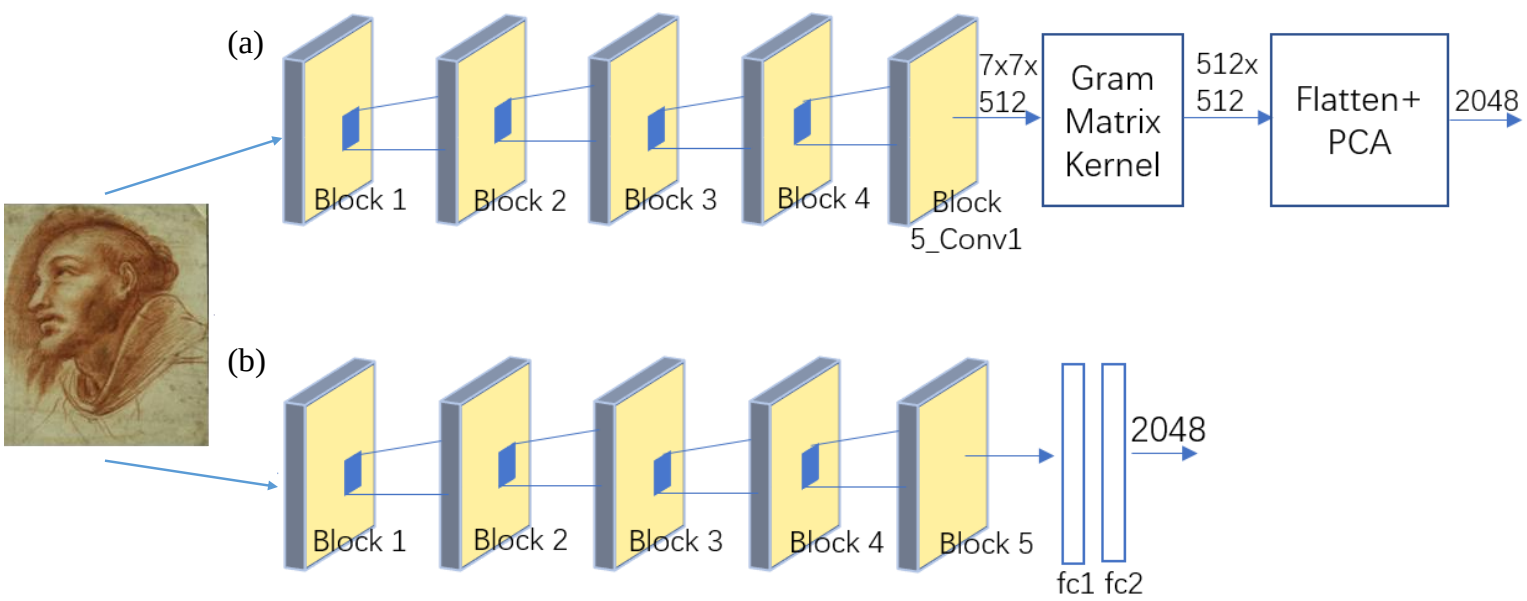

Figure: CNN featurare extraction with (a) style-based feature and (b) content-based feature

Markov Chain Modeling with Hierarchy of Multi-classifiers

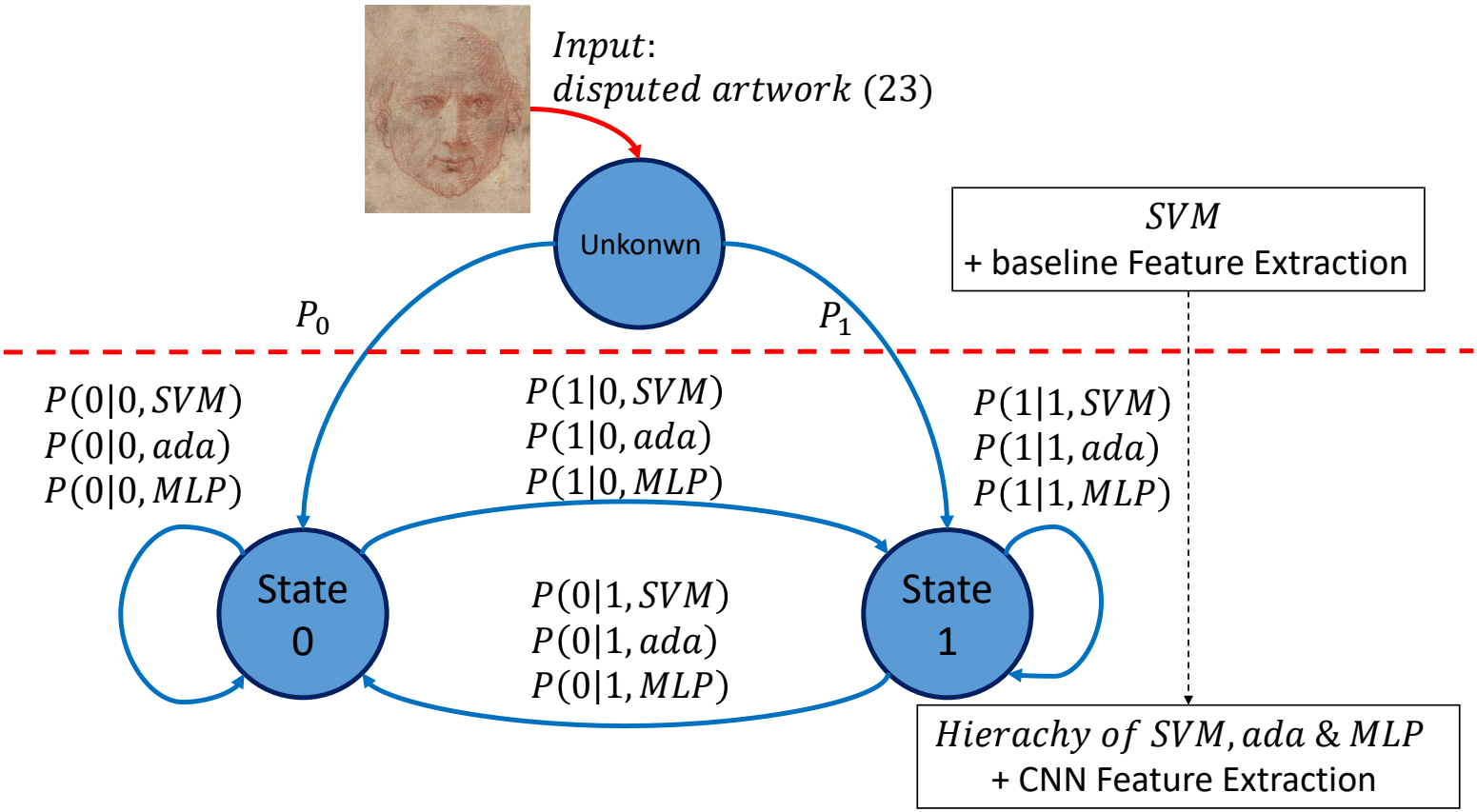

Figure: A hierarchy multi-classifiers aid to authentication modeling with Markov Chain

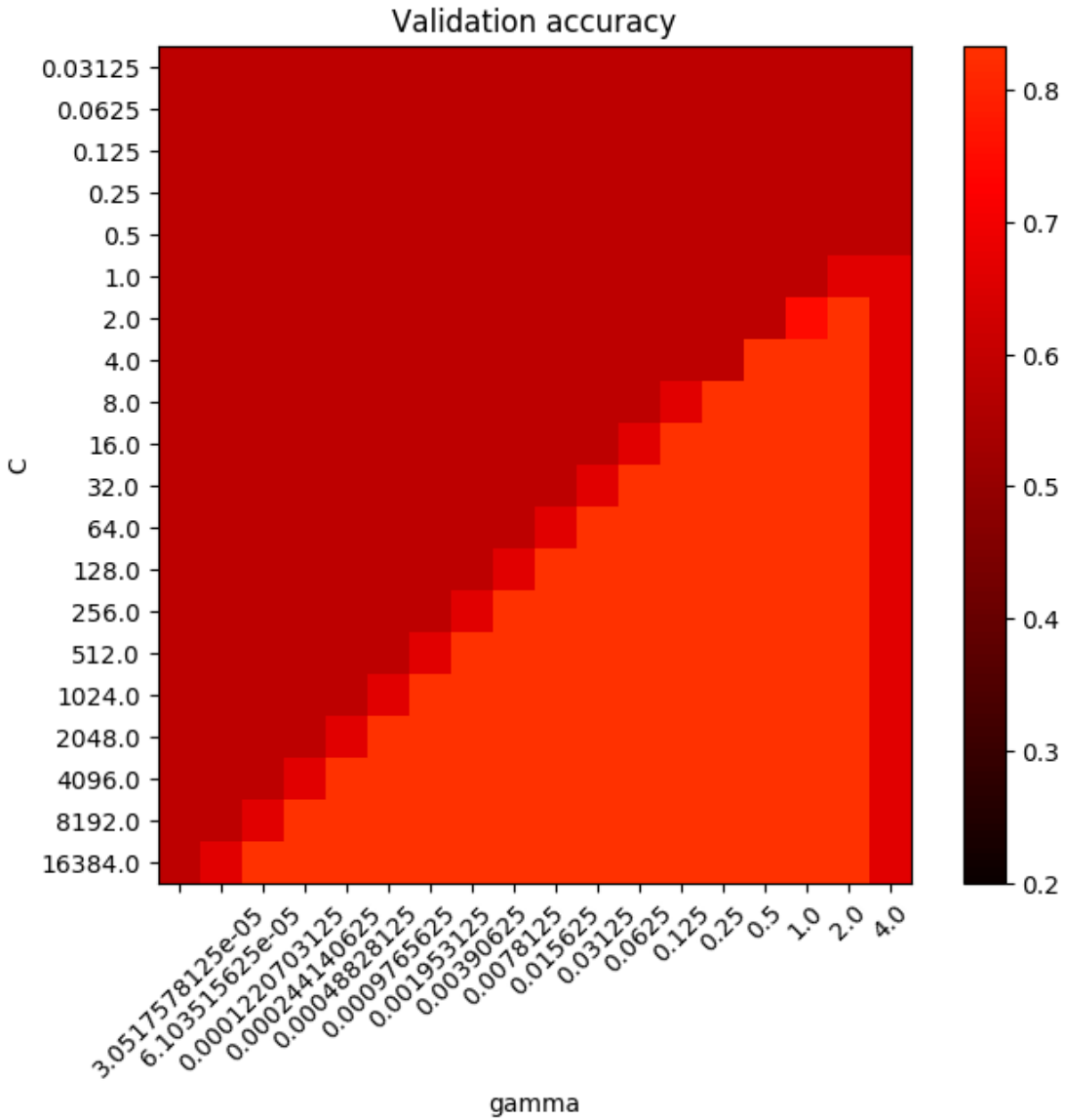

Figure: Using grid search method to optimize hyper-parameters of SVM.

Summary

For details discussion including conclusion with future work, please refer to main paper.

A sincere thanks to our fellow classmate and Prof. Yao!