

# Automatic Aesthetic Photo-Rating System

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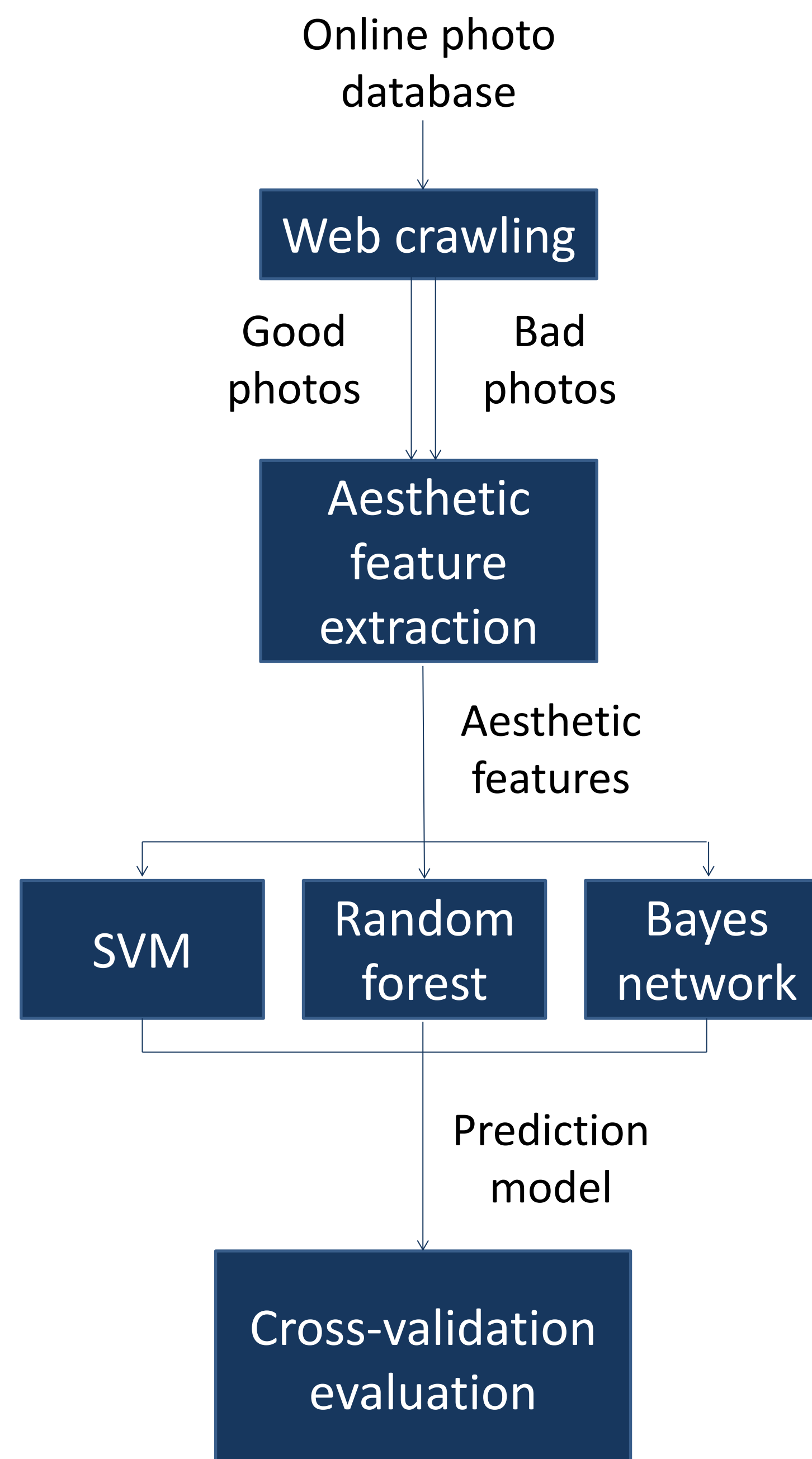
## Introduction



Growing prevalence of smartphone has made photography easier than ever. However, the quality of photos varies widely. Because judging the aesthetic of photos is based on several "rule-of-thumb", it remains difficult for computers to rate photos without manual intervention.

In this work, we utilize aesthetic features of photos and machine learning techniques to automatically distinguish good photos from bad ones. We believe this technique forms the basis of various novel applications, including real time view-finding suggestion, automatic photo quality enhancement, and massive photo rating.

## Method



## Aesthetic features

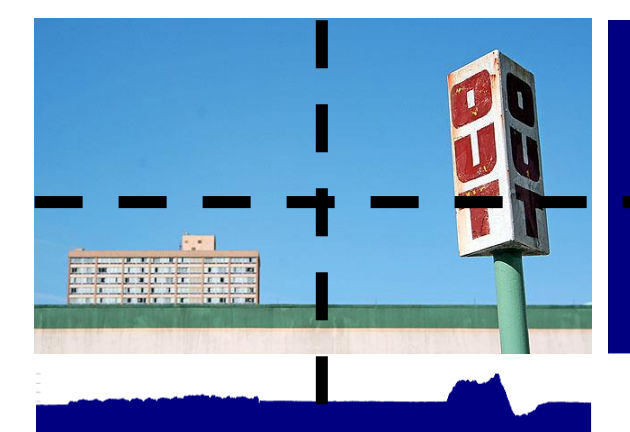
### Rule of thirds



### Background complexity



### Color centroid



### Luminance histogram

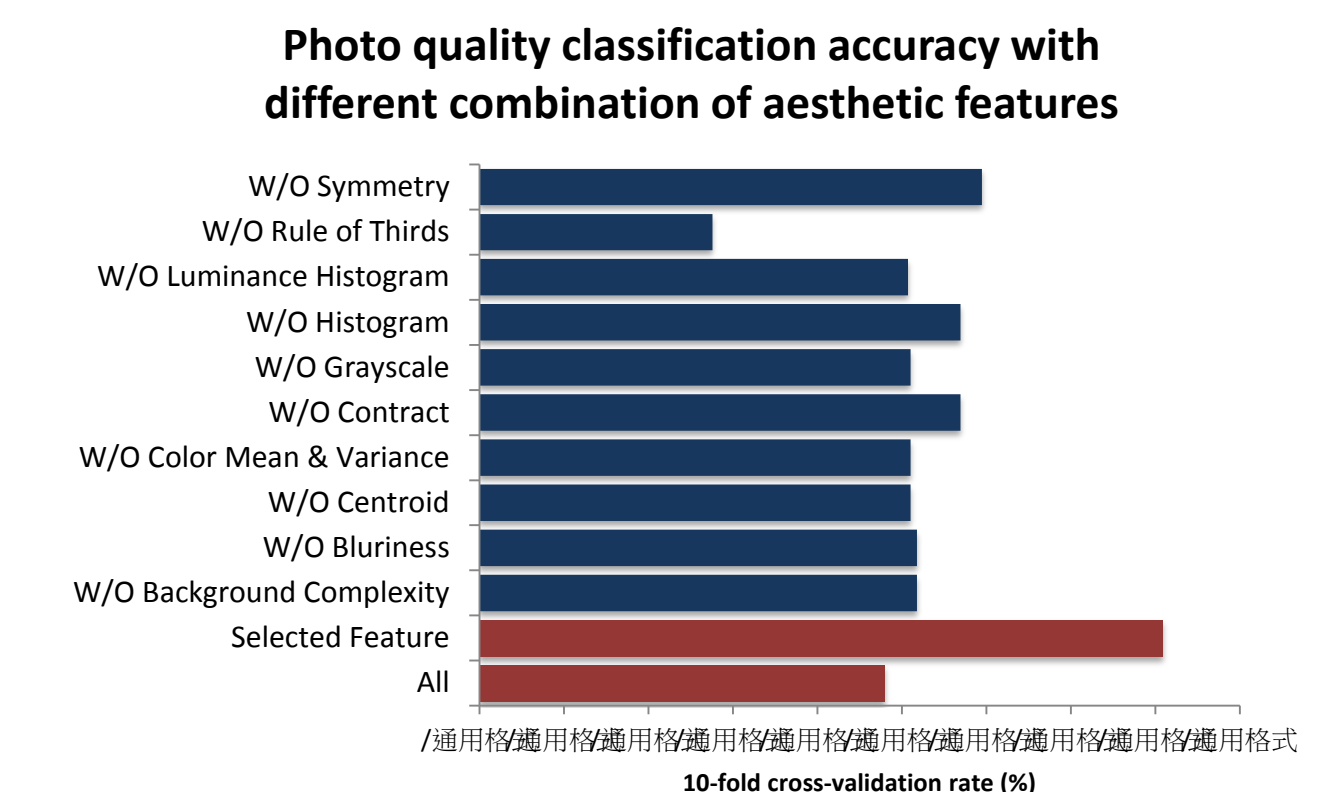


### Other features:

- |                   |                   |
|-------------------|-------------------|
| Blurriness        | Symmetry          |
| Saliency centroid | Grayscale         |
| Contrast          | RGB mean/variance |
| RGB histogram     | Noise level       |

## Results

### Feature relevance



### Learning method comparison

	SVM	Random forest	Bayes network
All	76.77%	80.33%	70.23%
Selected features	80.48%	82.38%	80.99%

### Performance measurement (training method: random forest)

	True Positive	False Positive	Precision	Recall
Good	86.4%	21.9%	80.7%	83.5%
Bad	78.1%	13.6%	84.4%	81.1%
Average	82.4%	17.9%	82.5%	82.3%

### Training parameters

Parameters of SVM are determined by performing grid search on  $C$  and  $\gamma$ , which are 32768 and 0.0078125, respectively. For random forest, we construct a forest of 300 random trees in training phase. The Bayes network is constructed by K2 algorithm.