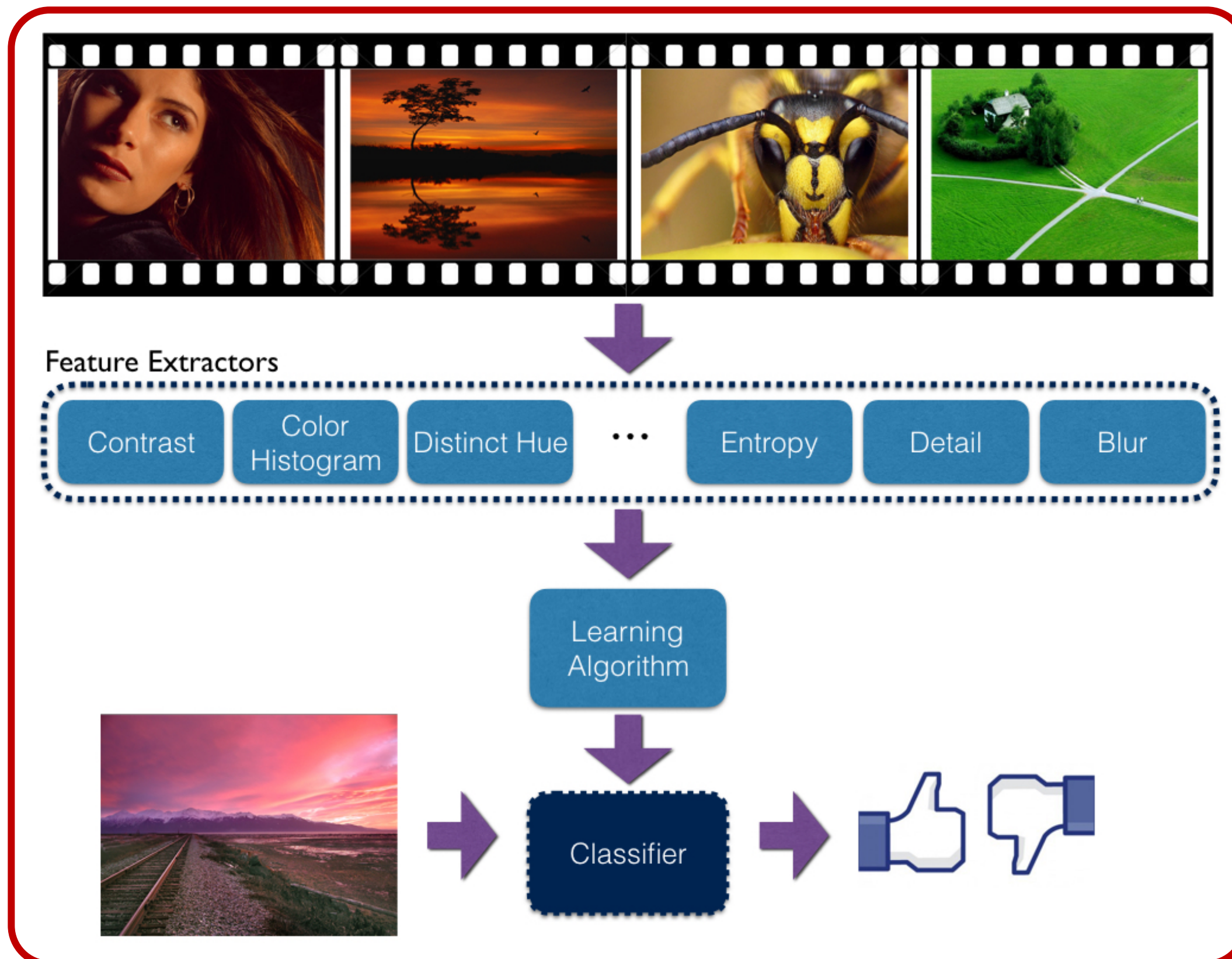


Classification of Photographs based on Perceived Aesthetic Quality

Jeff Hwang, Sean Shi

Department of Electrical Engineering, Stanford University

Aesthetic Classification



Feature Extraction

Entropy: measure of simplicity
Blur: variance of the Laplacian
Detail: ratio of subject edges to pixels

Hue: count # of distinct hues
Saturation: compute average saturation
Contrast: variance of pixel intensity

Spatial Correlation of Features

Extract features from each tile in partitioned image. Allow machine learning algorithm to infer relationships between the tiles.

Methodology

Experimental Results

Dataset

Scraped 2300 images from photo.net, each photograph rated between 1 and 7. We only consider photographs rated below 4.3 or above 6.

Classifier Tuning

Selected regularization, gamma, and kernel parameters of SVM via grid search.

K-fold Cross Validation

Performance was measured using 10-fold cross validation. Balanced number of positive/negative examples used.

Feature Selection

Feature Removed	Rate of Success (%)
All	~77
No Hue	~76
No Blur	~75
No Color Hist	~76
No Entropy	~75
No Sharpness	~76
No Edges	~74
No Contrast	~76

		Predicted	
		1	0
Actual Label	1	80.96%	26.78%
	0	19.04%	73.22%

SVM Gaussian Kernel, C=1, $\gamma=0.08$
10-fold Cross Validation Success