DEEP LEARNING-BASED FRAMEWORK FOR ACCURATE CLOTHING ATTRIBUTE RECOGNITION AND STYLE NAVIGATION FOR GAIT RECOGNITION

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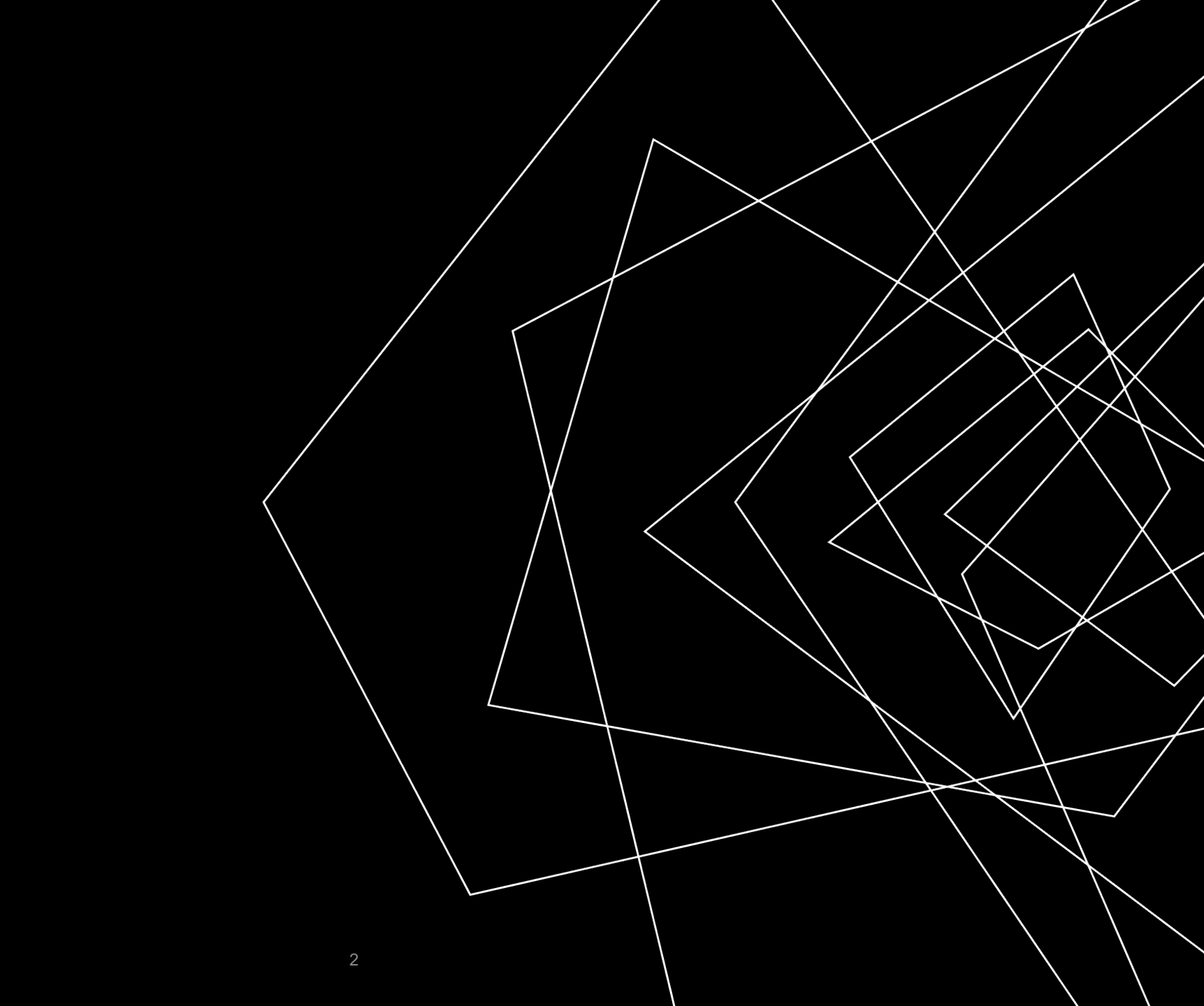


INTRODUCTION

- Extraction of information has become more constant due to availability of large amounts of image data and e-commerce.
- Recognizing attributes in an image is gaining recognition to forecast tasks.
- Our paper mainly focuses on recognizing attributes related to clothing which are built using Deep CNN.
- Our framework has a lot of applications like retrieving and navigating on basis of style, labeling of clothing pieces according to personalized style.

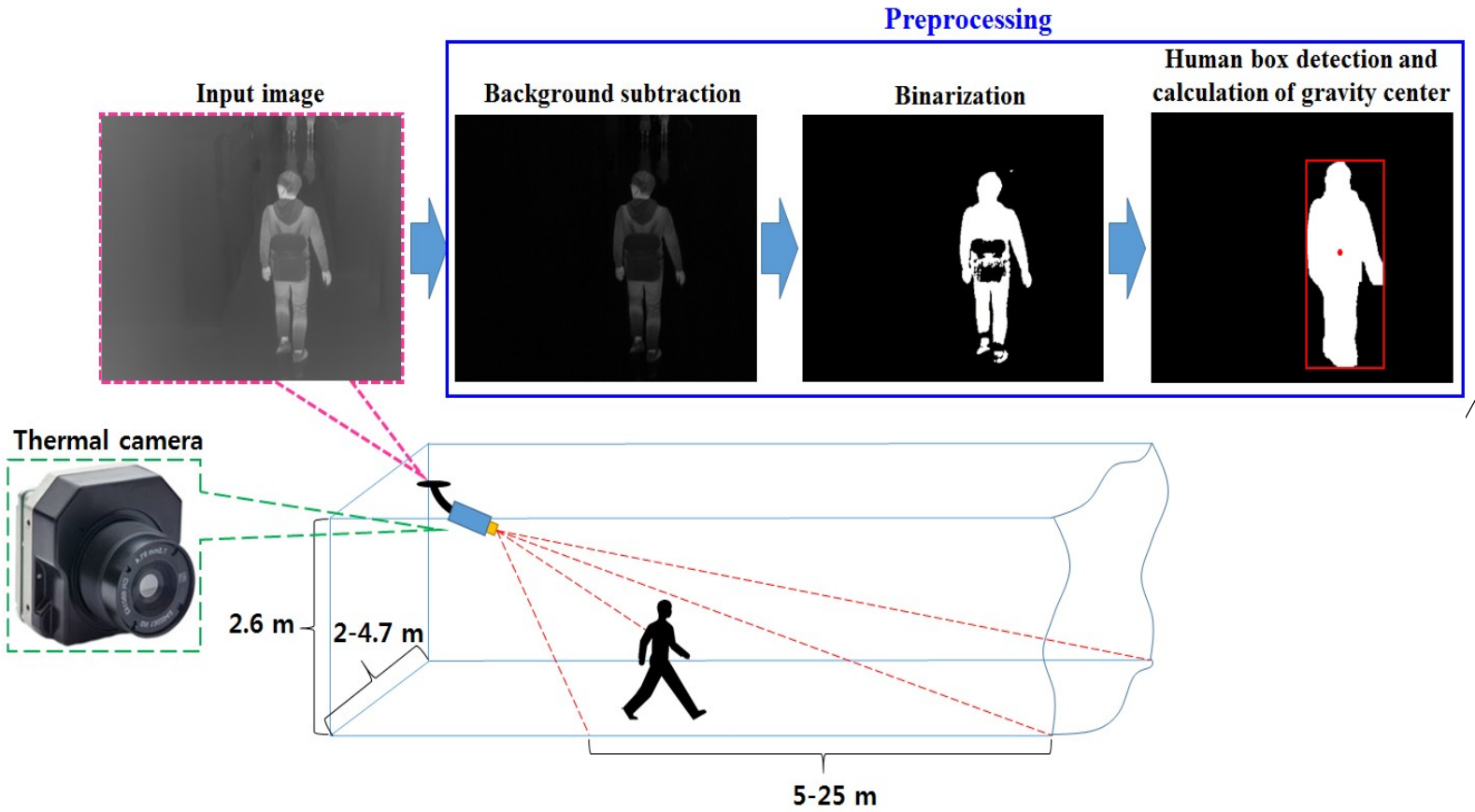
LITERATURE REVIEW

- Studies prior to our paper were mainly concerned with textures and their distribution in pattern, color of the theme in low features which were based on pixels to search for connection. They were unable to apprehend the characteristics of visual aspect to identify the attributes of clothing.
- In order to resolve these issues, we are presenting a method based on ResNet to identify various clothing attributes like waists, collars, front buttons, lengths, and sleeves.

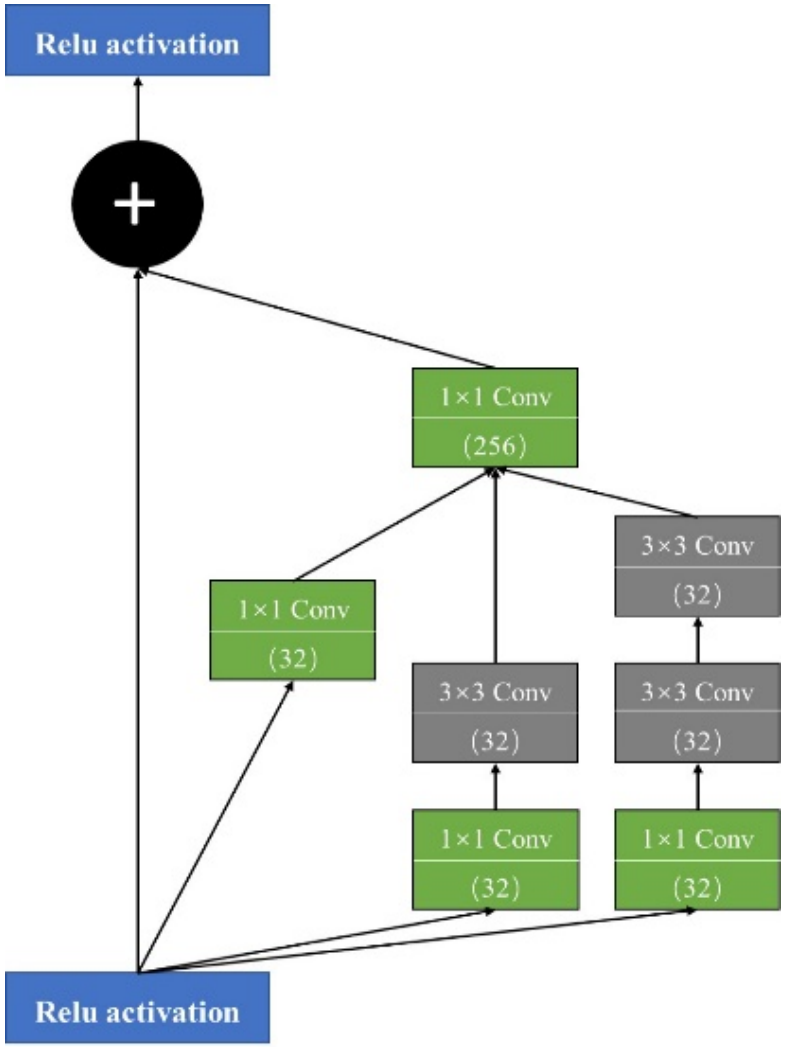
OBJECTIVES

- To make the selective search algorithm more efficient in extracting main parts of clothing, we make changes to improve the methods for calculating texture and color similarity.
- To classify features from region of candidates using a classifier which works on L-softmax loss, sparse CNN.

METHODOLOGY



METHODOLOGY



DATASET

DATASET


Circumference
skintight
loose
formfitting
oversized
Sleeve length
sleeveless
mid-sleeved
short-sleeved
long-sleeved
Placket
full-placket
half-placket
Waist shape
waist-controlled
Collar shape
normal-collar
peter pan
V-collar
round-collar
Sleeve shape
horn-sleeve
normal-sleeve
Pocket
pocket

ALGORITHM

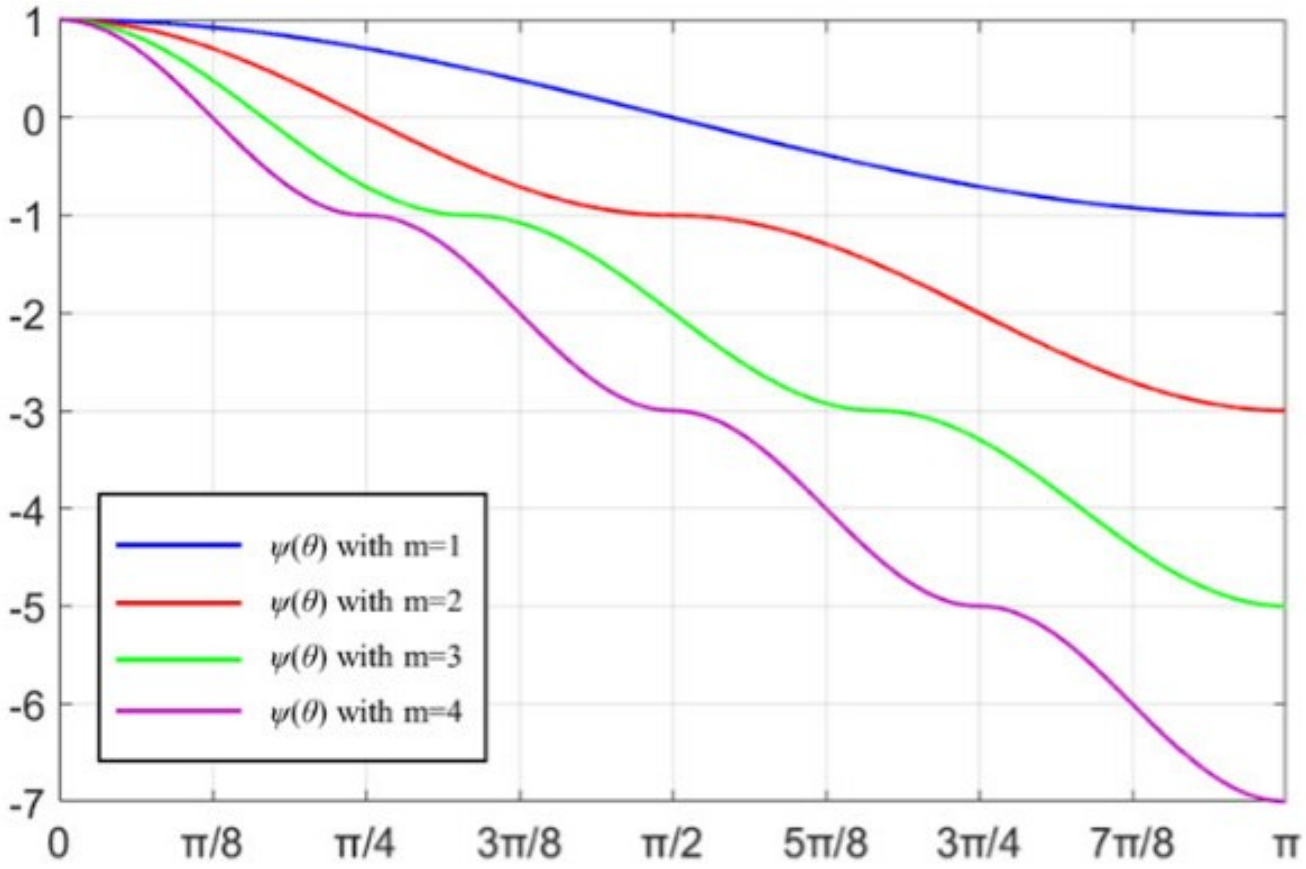
Steps for input of images are as follows,

1) R = {r1, r2 · · · rn} is the set which is used to acquire initial region with the use of segmentation procedures built on graphs.
2) size, color and texture resemblance are stored in a set S are used for similarity calculation.
3) Rq and rp are combined inn set R to produce rt and similarity between rq and rp is deleted.
4) Rt was stored in R set to calculate resemblance between regions adjacent and rt.
5) The last two steps are iterated till set S is empty.
6) Candidate packs are filtered according to size.

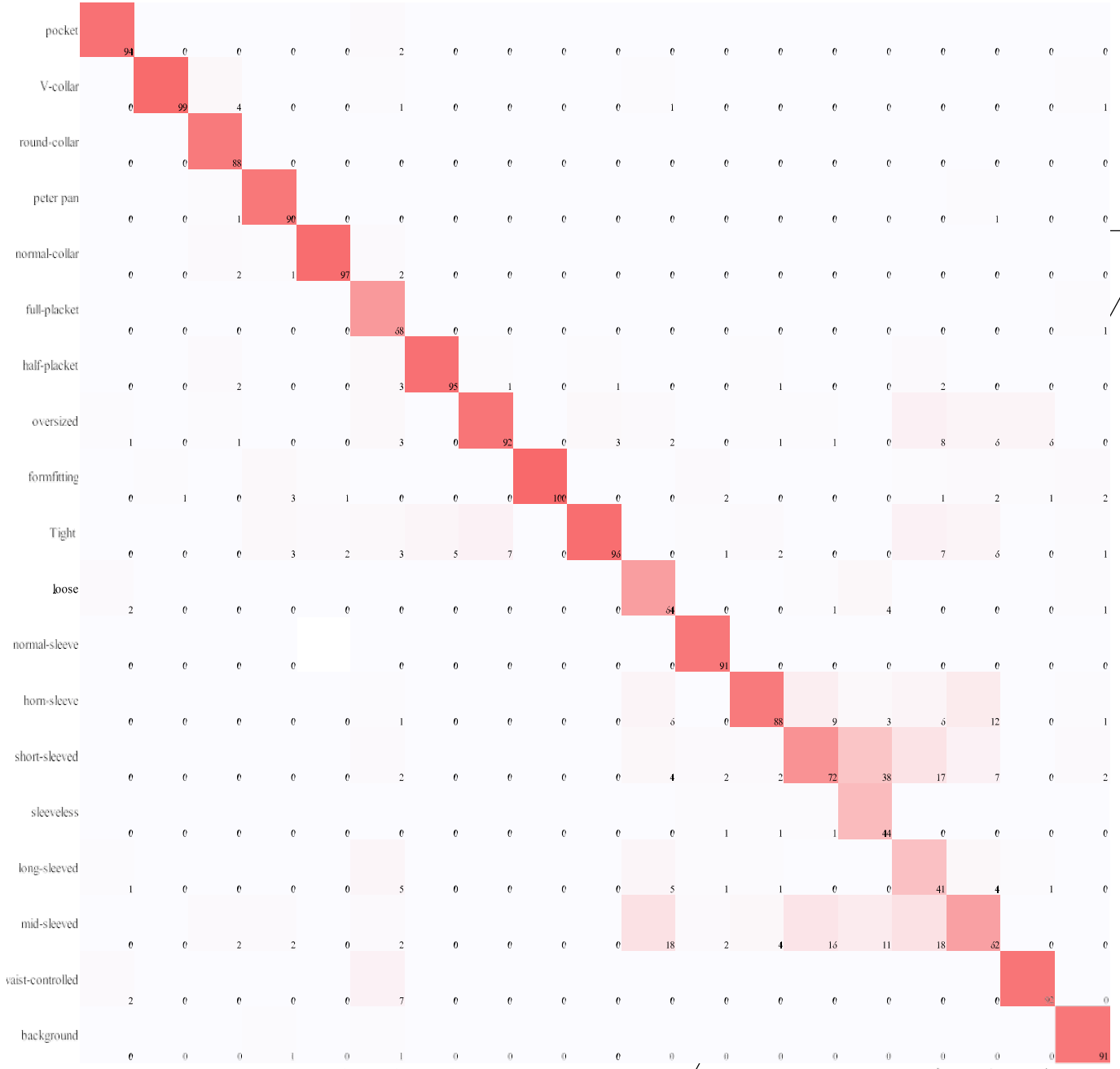
RESULTS

class		class	
tight	0.946	long-sleeved	0.576
formfitting	0.958	waist-controlled	0.682
loose	0.951	pocket	0.964
oversized	0.938	full-placket	0.573
horn-sleeve	0.879	half-placket	0.684
normal-sleeve	0.819	normal-collar	0.864
sleeveless	0.621	peter pan	0.859
short-sleeved	0.752	V-collar	0.884
mid-sleeved	0.776	round-collar	0.825

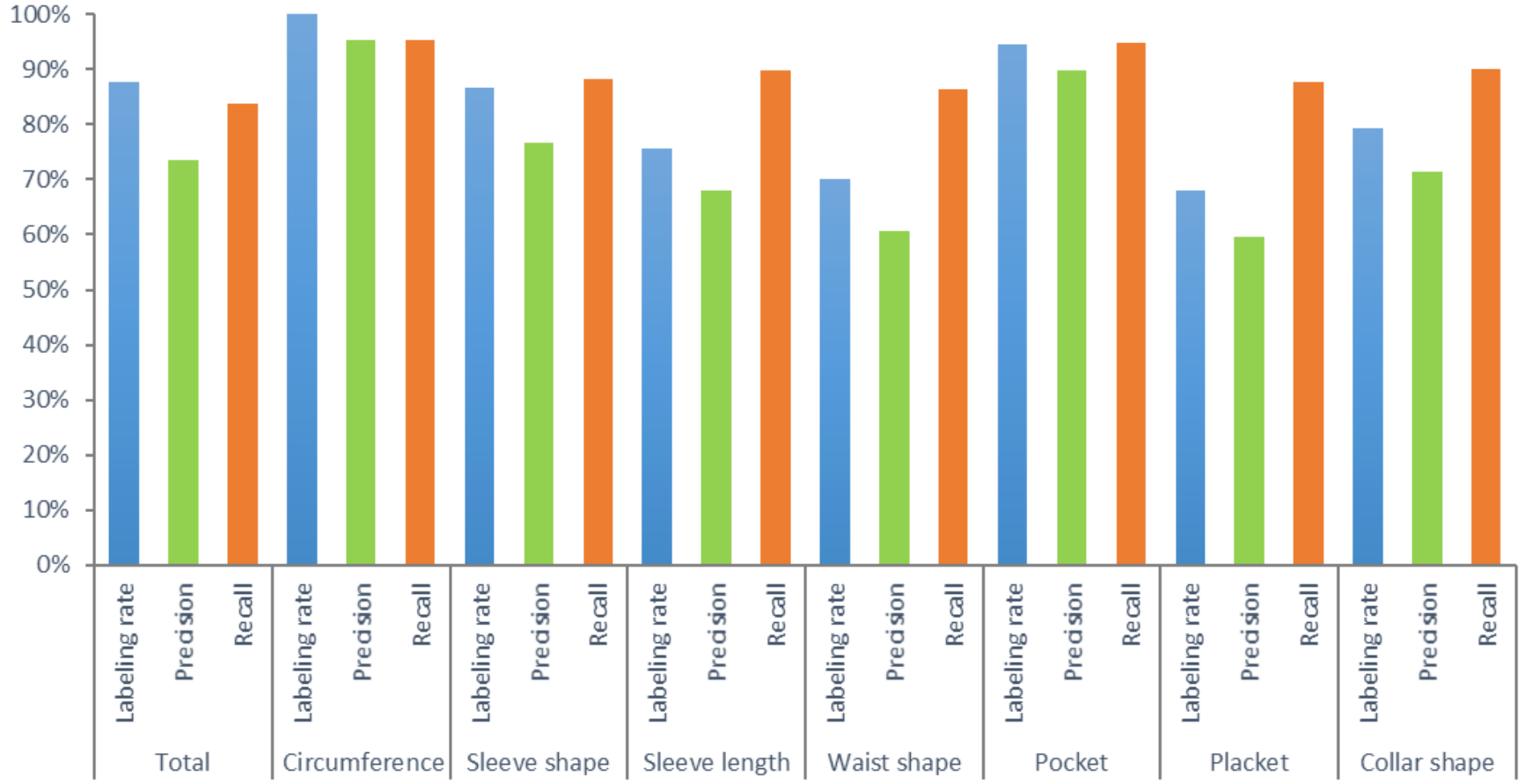
RESULTS


1
0
-1
-2
-3
-4
-5
-6
-7
0
π/8
π/4
3π/8
π/2
5π/8
3π/4
7π/8
π
ψ(θ) with m=1
ψ(θ) with m=2
ψ(θ) with m=3
ψ(θ) with m=4

RESULTS


pocket
V-collar
round-collar
peter pan
normal-collar
full-placket
half-placket
oversized
formfitting
Tight
loose
normal-sleeve
horn-sleeve
short-sleeved
sleeveless
long-sleeved
mid-sleeved
waist-controlled
background

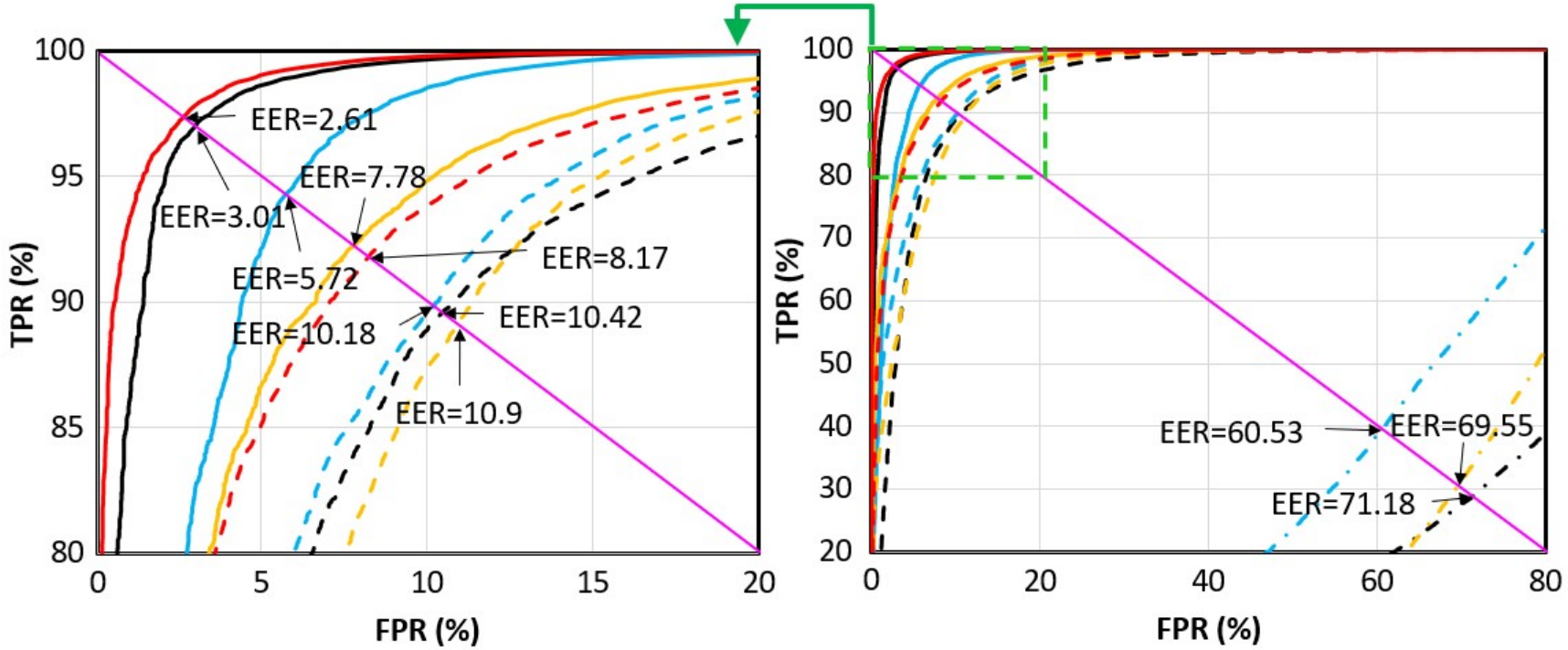
RESULTS


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Labeling rate
Precision
Recall
Total
Circumference
Sleeve shape
Sleeve length
Waist shape
Pocket
Placket
Collar shape

RESULTS

Methods	AUC	EER
CGI + PCA + LDA [1]	20.73	**71.18**
CGI [2] + VGG Net-19	95.2	**10.42**
CGI [3] + VGG Net-19 + CNN-LSTM	99.41	**3.01**
GEI + RT + PCA [4]	34.82	**60.53**
GEI [5] + VGG Net-19	96.47	**10.18**
GEI [6] + VGG Net-19 + CNN-LSTM	98.19	**5.72**
Contour-width-based + spatio-temporal smoothing + DTW [7]	22.66	**69.55**
Contour-width-based + spatio-temporal smoothing [8] + VGG Net-19	95.62	**10.9**
Proposed feature + VGG Net-19	97.49	**8.17**
Proposed method	**99.71**	**2.61**

RESULTS



- CGI + PCA + LDA [52]
- CGI [52] + VGG Net-19
- CGI [52] + VGG Net-19 + CNN-LSTM
- GEI + RT + PCA [53]
- GEI [53] + VGG Net-19
- GEI [53] + VGG Net-19 + CNN-LSTM
- Contour-width-based + spatio-temporal smoothing + DTW [54]
- Contour-width-based + spatio-temporal smoothing [54] + VGG Net-19
- Contour-width-based + spatio-temporal smoothing [54] + VGG Net-19 + CNN-LSTM
- **Proposed feature + VGG Net-19**
- **Proposed method**

CONCLUSION

We have produced a new framework to extract the regions of attribute and clothing features by keeping precision and time of training in mind. First and foremost, algorithm of selective search is used for extracting target regions. After that L-softmax and ResNet are utilized for extracting attribute region and speculating the classification.

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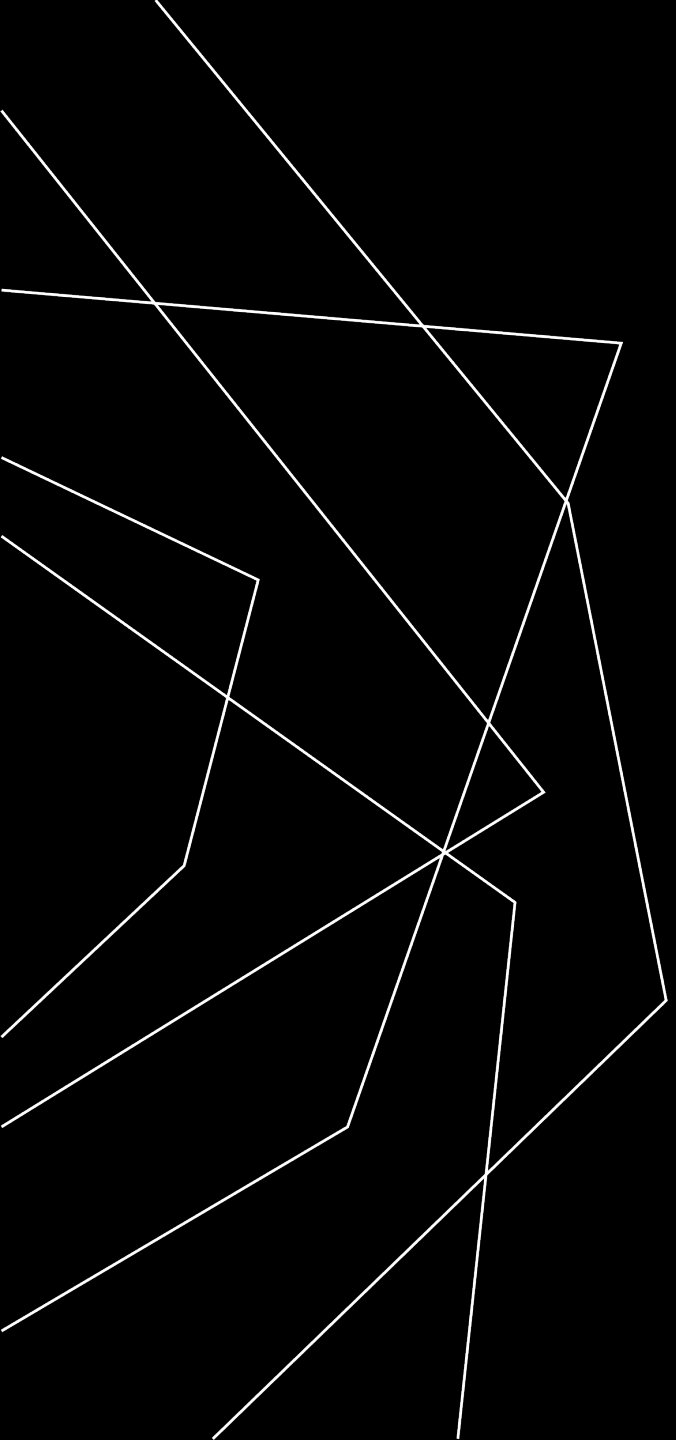

THANK YOU

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