

The State-of-the-art Face Detection and Facial Expression Recognition

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1 Face Detection

Table 1 and Table 2 summarize the state-of-the-art methods in terms of Face Detection in recent years. The Github link is the source code corresponding to the paper.

Table 1: Face Detection Methods (Part 1)

Method	Dataset	Performances(%)	Github	Year
AInnoFace [1]	WIDER FACE (hard)	91.2	-	2019
	WIDER FACE (medium)	95.7		
	WIDER FACE (easy)	96.5		
	Annotated Faces in the Wild	-		
	FDDB	-		
	PASCAL Face	-		
DSFD [2]	WIDER FACE (hard)	90.0	[3]	2019
	WIDER FACE (medium)	95.3		
	WIDER FACE (easy)	96.0		
	Annotated Faces in the Wild	-		
	FDDB	99.1		
	PASCAL Face	-		
PyramidBox [4]	WIDER Face (Hard)	90.0	[5]	2018
	WIDER FACE (medium)	94.6		
	WIDER FACE (easy)	95.6		
	Annotated Faces in the Wild	-		
	FDDB	98.7		
	PASCAL Face	-		
SRN [6]	WIDER Face (Hard)	89.6	[7]	2018
	WIDER FACE (medium)	94.8		
	WIDER FACE (easy)	95.9		
	Annotated Faces in the Wild	99.87		
	FDDB	98.8		
	PASCAL Face	99.09		
Robust Face Detection [8]	WIDER face (hard)	88.9	[9]	2018
	WIDER FACE (medium)	-		
	WIDER FACE (easy)	-		
	Annotated Faces in the Wild	99.6		
	FDDB	98.7		
	PASCAL Face	99.0		

2 Facial Expression Recognition

Table 3 summarizes the state-of-the-art methods in terms of Facial Expression Recognition (Emotion Detection) in recent years. The Github link is the source code corresponding to the paper.

Table 2: Face Detection Methods (Part 2)

Method	Dataset	Performances(%)	Github	Year
S^3FD [10]	WIDER face (hard)	84.0	[11]	2017
	WIDER FACE (medium)	91.3		
	WIDER FACE (easy)	92.8		
	Annotated Faces in the Wild	99.85		
	FDDB	98.3		
	PASCAL Face	98.49		
Finding Tiny Faces [12]	WIDER face (hard)	82.3	[13]	2017
	WIDER FACE (medium)	90.8		
	WIDER FACE (easy)	91.9		
	Annotated Faces in the Wild	-		
	FDDB	-		
	PASCAL Face	-		
FaceBoxes [14]	WIDER face (hard)	-	[15]	2017
	WIDER FACE (medium)	-		
	WIDER FACE (easy)	-		
	Annotated Faces in the Wild	98.91		
	FDDB	96.0		
	PASCAL Face	96.3		
MTCNN [16]	WIDER face (hard)	60.7	[17]	2016
	WIDER FACE (medium)	82.0		
	WIDER FACE (easy)	85.1		
	Annotated Faces in the Wild	-		
	FDDB	-		
	PASCAL Face	-		

Table 3: Facial Expression Recognition Methods

Method	Dataset	Performances(%)	Github	Year
Region Attention Network [18]	FER+	89.16	[19]	2019
	AffectNet	59.5		
	SFEW	56.4		
	RAF	86.9		
MicroExpSTCNN[20]	CAS(ME)	87.80	[21]	2019
	SMIC	68.75		
FERAtt [22]	-	-	[23]	2019
Covariance Pooling [24]	SFEW 2.0	58.14	[25]	2018
	RAF	87.0		
Engagement Recognition [26]	ER	72.38	[27]	2018
IL-CNN [28]	CK+	94.35	[29]	2018
	MMI	70.67		
	SFEW	52.52		
	OULU-CASIA	77.29		
Greedy Search [30]	CK+	88.7	[31]	2017
MicroExpNet [32]	CK+	84.8	[33]	2017
	Oulu-CASIA	62.69		
DCNN [34]	FER+	99.0 - 99.5	[35]	2016
FER-CNN [36]	FER2013	75.2	-	2016
DeXpression [37]	CKP	99.6	[38]	2015
	MMI	98.63		

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