

Prepoznavanje pokreta ruku

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Motivacija



Širok spektar primene.
Na primer: Ambijentalno
praćenje u pametnim kućama,
kao i upravljanje raznim
pametnim uredajima(telefoni,
satovi, dronovi...).

Dataset

Dynamic Hand Gesture

14/28 dataset:



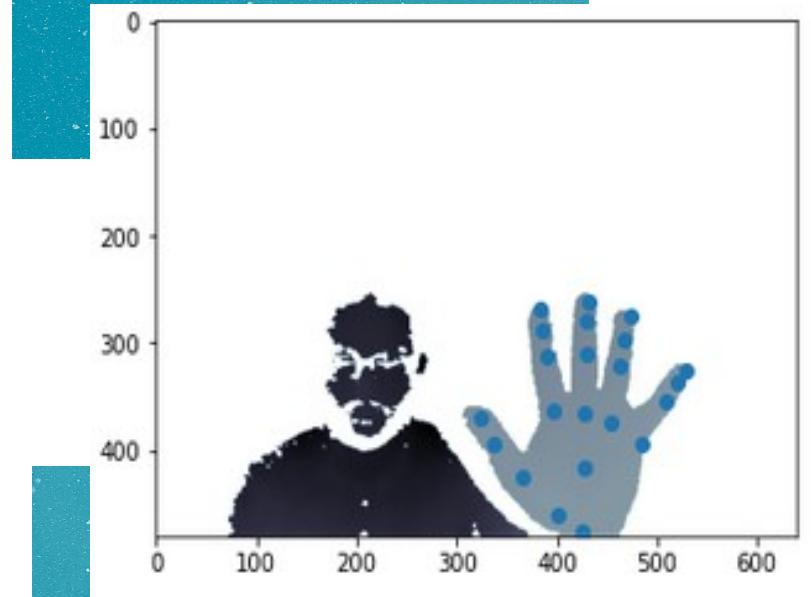
14 pokreta, po 200 pokušaja



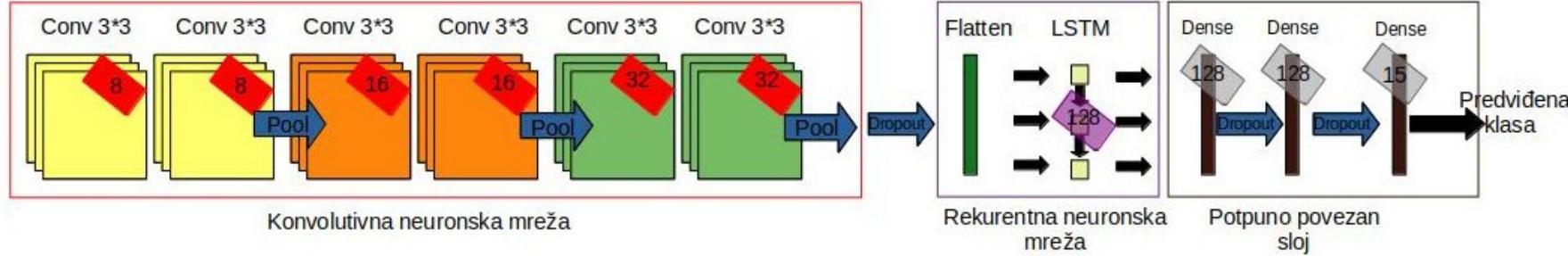
Svaki pokušaj je niz slika



Uz svaki pokret txt datoteka
sa koordinatama skeleta

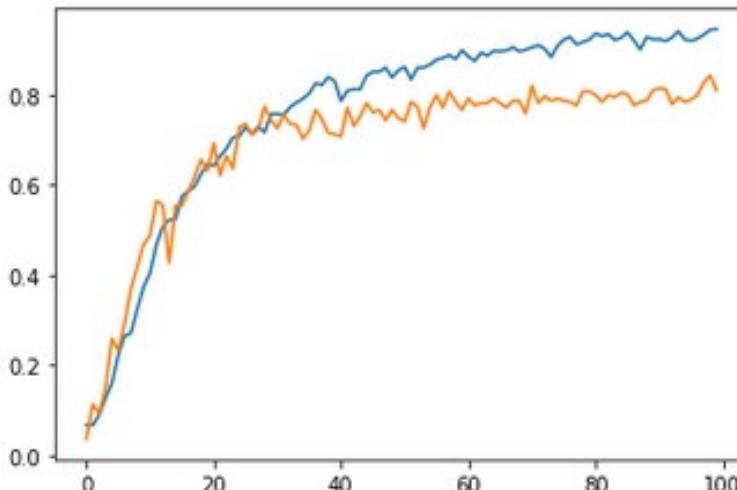
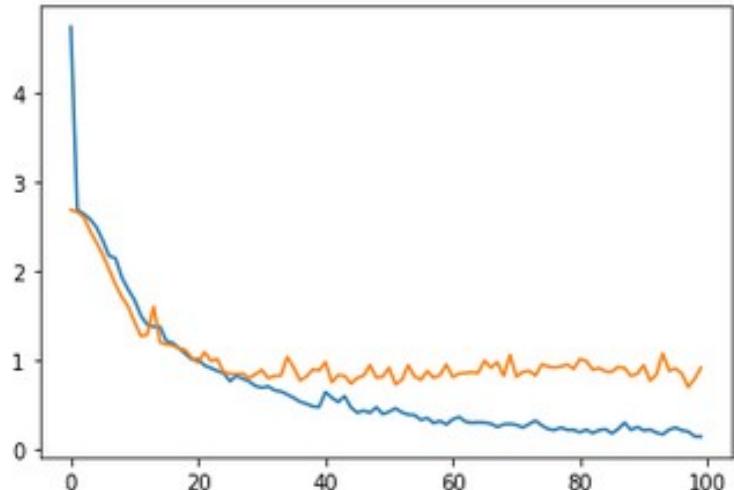


Neuronska mreža



Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 100, 44, 8)	80
conv2d_1 (Conv2D)	(None, 100, 44, 8)	584
max_pooling2d (MaxPooling2D)	(None, 50, 22, 8)	0
conv2d_2 (Conv2D)	(None, 50, 22, 16)	1168
conv2d_3 (Conv2D)	(None, 50, 22, 16)	2320
max_pooling2d_1 (MaxPooling2D)	(None, 25, 11, 16)	0
conv2d_4 (Conv2D)	(None, 25, 11, 32)	4640
conv2d_5 (Conv2D)	(None, 25, 11, 32)	9248
max_pooling2d_2 (MaxPooling2D)	(None, 12, 5, 32)	0
dropout (Dropout)	(None, 12, 5, 32)	0
time_distributed (TimeDistributed)	(None, 12, 160)	0
lstm (LSTM)	(None, 128)	147968
dense (Dense)	(None, 128)	16512
dropout_1 (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 128)	16512
dropout_2 (Dropout)	(None, 128)	0
dense_2 (Dense)	(None, 15)	1935
<hr/>		
Total params: 200,967		
Trainable params: 200,967		
Non-trainable params: 0		

Rezultati



Mere greške i tačnosti kroz epohe

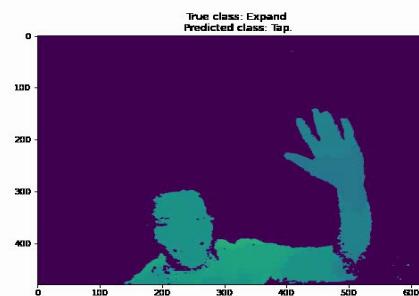
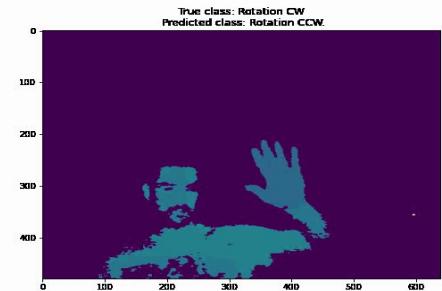
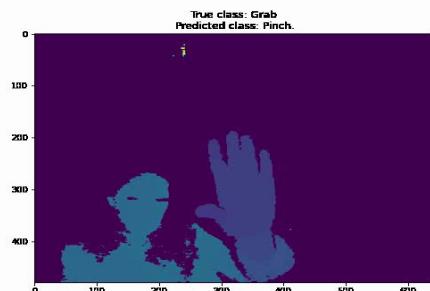
Matrica konfuzije

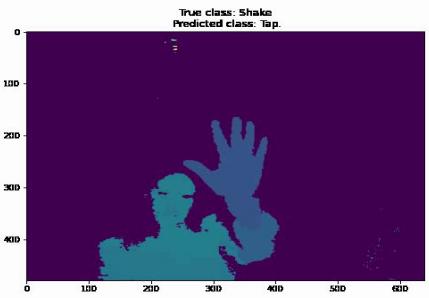
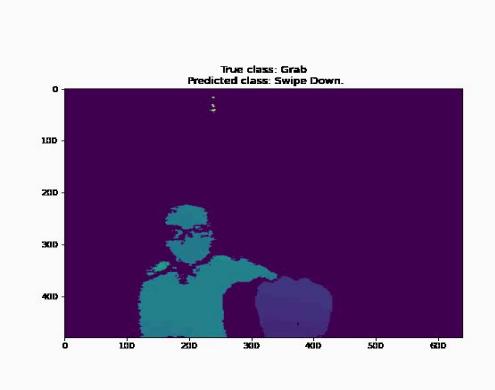
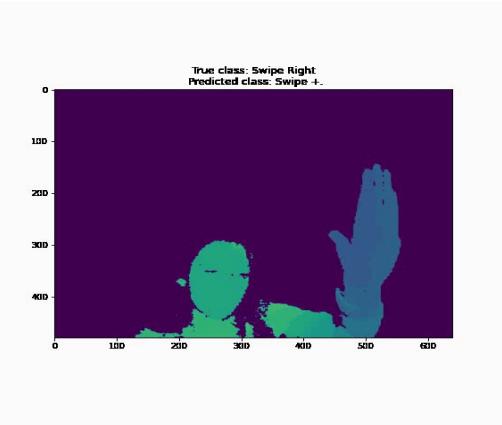


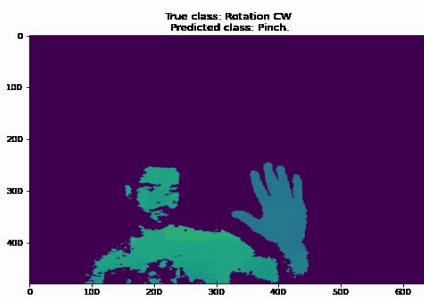
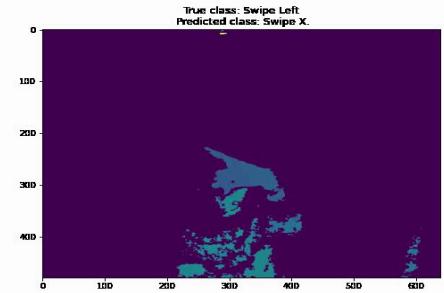
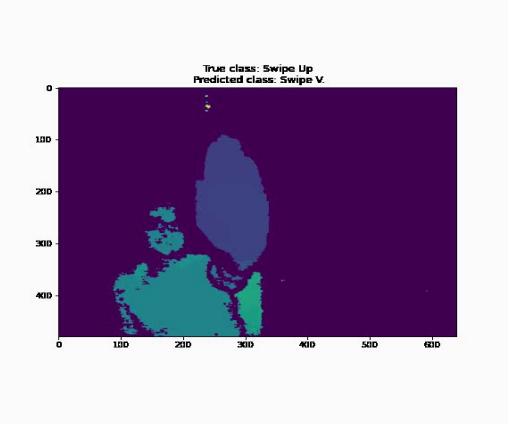
Element x_{ij} predstavlja broj istanci klase i koje je dati model klasifikovao kao klasu j .

	Grab	Tap	Expand	Pinch	Rotation CW	Rotation CCW	Swipe Right	Swipe Left	Swipe Up	Swipe Down	Swipe X	Swipe V	Swipe +	Shake
Grab	array([[16, 0, 0, 23, 1, 0, 0, 0, 1, 7, 1, 0, 0, 0, 0], [4, 33, 1, 5, 2, 0, 1, 2, 9, 10, 0, 0, 0, 0, 1], [1, 1, 46, 0, 2, 0, 0, 1, 3, 0, 0, 0, 0, 0, 1], [6, 0, 0, 47, 2, 0, 0, 0, 0, 3, 0, 0, 0, 0, 0], [0, 0, 3, 2, 52, 1, 0, 5, 0, 1, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 52, 0, 0, 0, 2, 0, 0, 0, 0, 0], [0, 0, 1, 0, 1, 0, 46, 0, 2, 0, 1, 5, 1, 0], [0, 0, 1, 0, 1, 0, 0, 69, 0, 0, 1, 1, 0, 2], [0, 0, 3, 0, 0, 0, 0, 0, 43, 0, 0, 0, 1, 0], [3, 1, 0, 2, 1, 0, 0, 0, 2, 55, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 63, 4, 3, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 61, 0, 0, 0, 0], [0, 0, 0, 1, 0, 0, 4, 0, 1, 1, 47, 0], [0, 0, 0, 2, 1, 0, 0, 0, 1, 0, 0, 0, 0, 60]]))													

Pogrešno klasifikovane instance









Hvala na pažnji