



KECERDASAN BUATAN

PERTEMUAN KE - 14

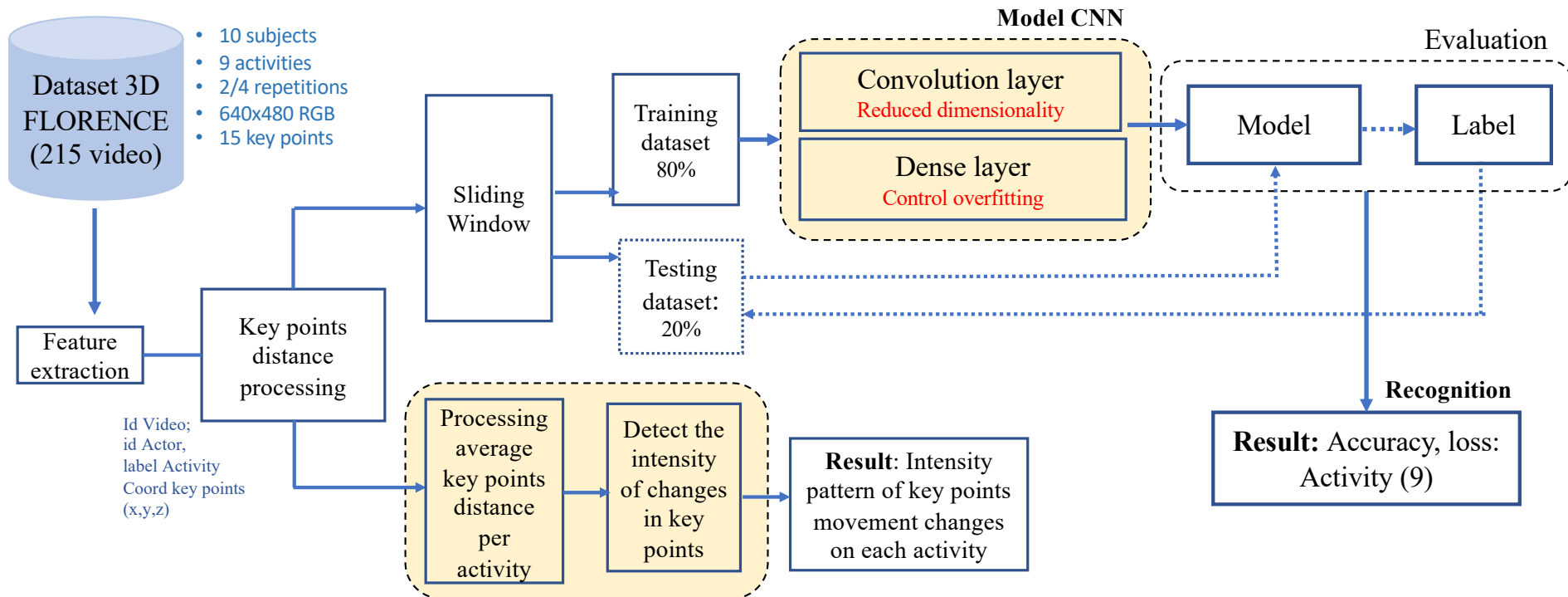
ENDANG SRI RAHAYU

Teknik Elektro – Fakultas Teknologi Industri – Universitas Jayabaya

Outlines:

- Integrasi Penelitian (1)

Workflow metodologi Human Activity Recognition - CNN

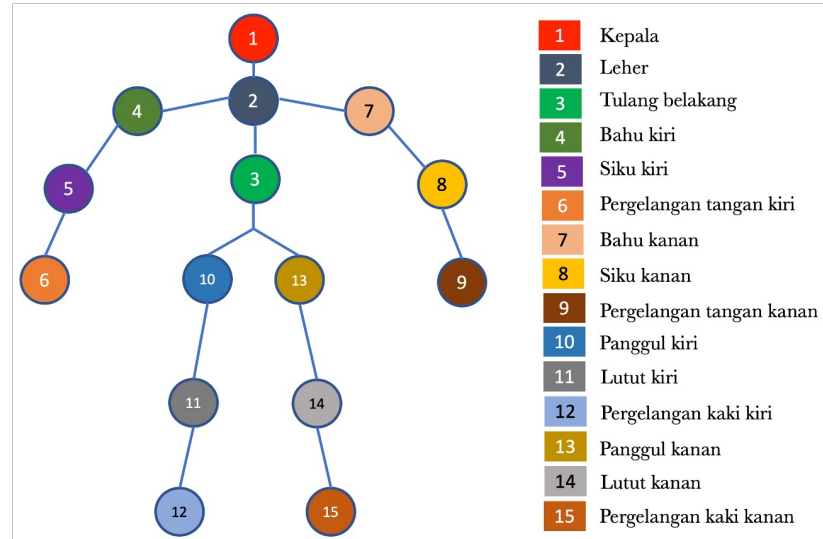


1. Pengenalan Aktivitas Manusia Berbasis Perubahan Jarak Sendi

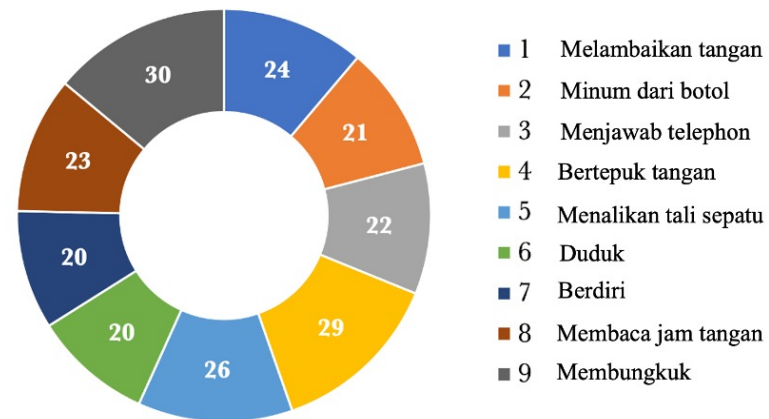
Dataset FLORENCE 3D Actions



Jumlah subyek = 10
Dilakukan perulangan 2/3 (215 video)
Setiap subyek melakukan 9 aktifitas



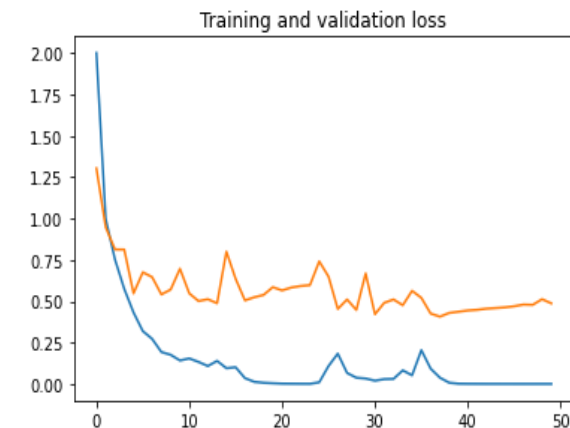
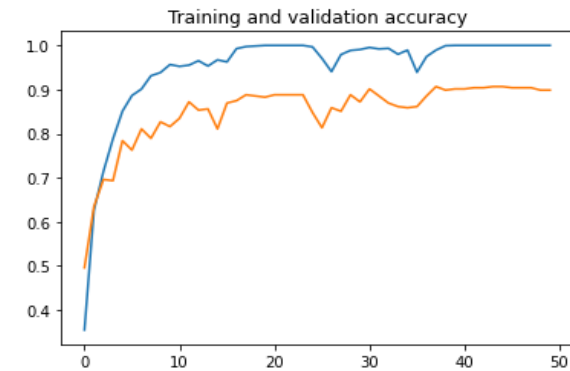
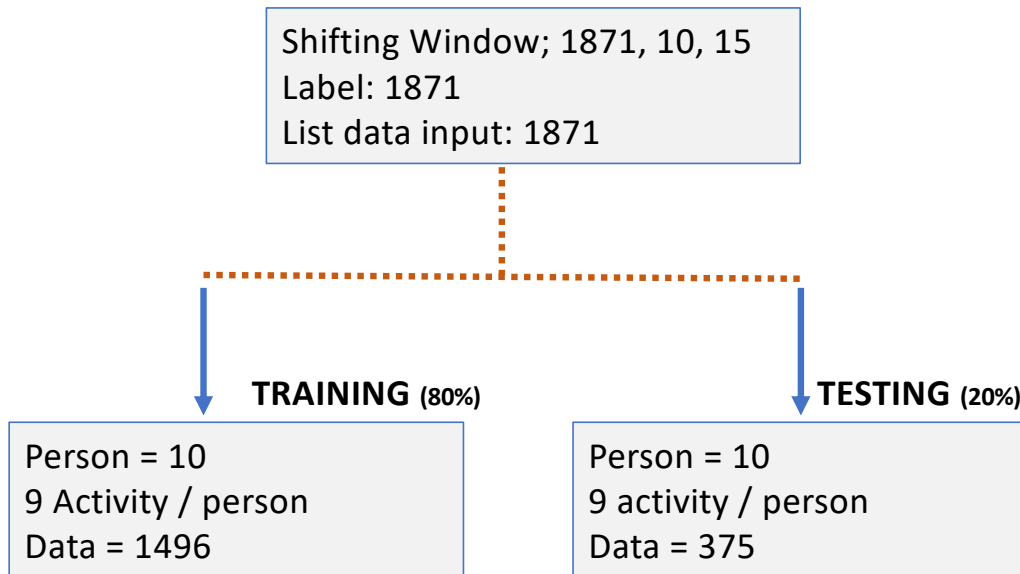
Gambar Posisi sendi



Gambar Jumlah video Aktivitas

Split data --> training, testing

Hasil eksperimen: deteksi aktifitas (50 epoch)



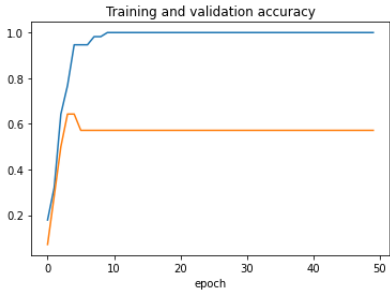
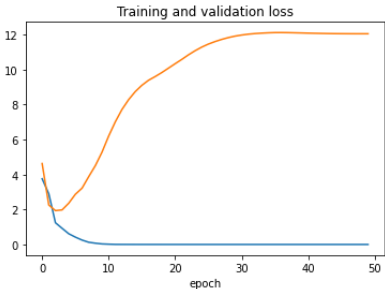
loss: 2.0925e-06 - accuracy: 1.0000 - val_loss: 12.0550 - val_accuracy: 0.5714

SIZE WINDOW 25

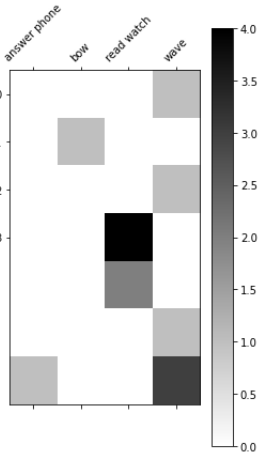
Model: "sequential_3"

Layer (type)	Output Shape	Param #
=====		
conv2d_9 (Conv2D)	(None, 23, 13, 32)	320
conv2d_10 (Conv2D)	(None, 21, 11, 32)	9248
dropout_3 (Dropout)	(None, 21, 11, 32)	0
conv2d_11 (Conv2D)	(None, 19, 9, 32)	9248
flatten_3 (Flatten)	(None, 5472)	0
dense_18 (Dense)	(None, 256)	1401088
dense_19 (Dense)	(None, 256)	65792
dense_20 (Dense)	(None, 256)	65792
dense_21 (Dense)	(None, 64)	16448
dense_22 (Dense)	(None, 64)	4160
dense_23 (Dense)	(None, 9)	585
=====		

Total params: 1,572,681
Trainable params: 1,572,681
Non-trainable params: 0

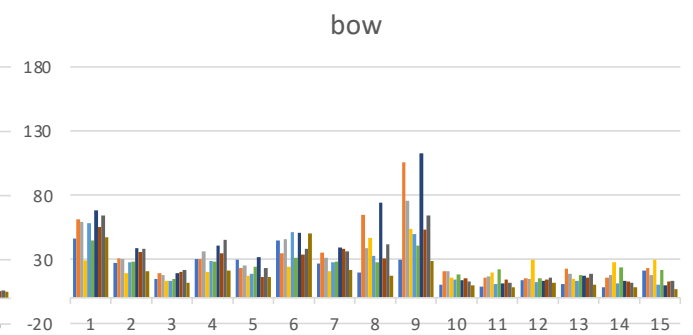
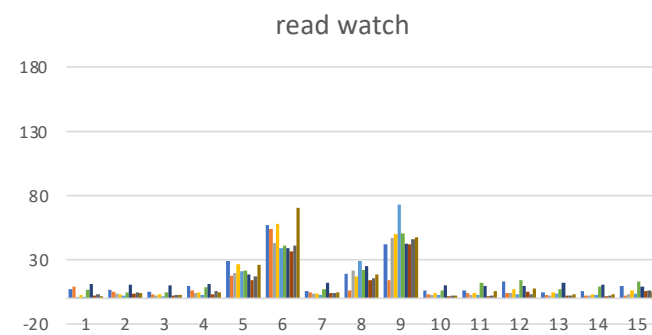
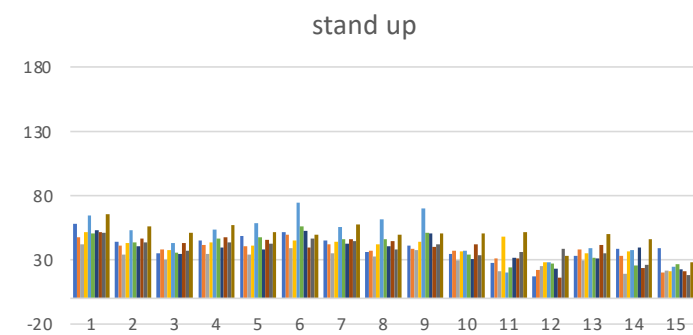
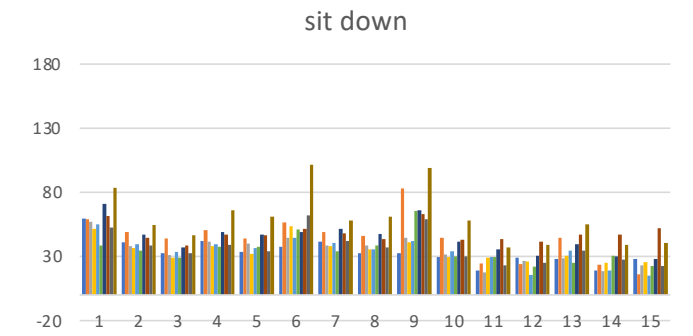
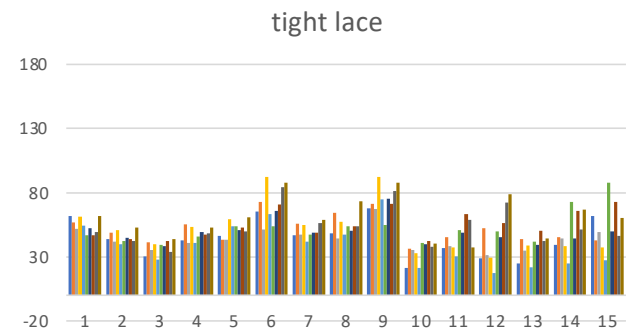
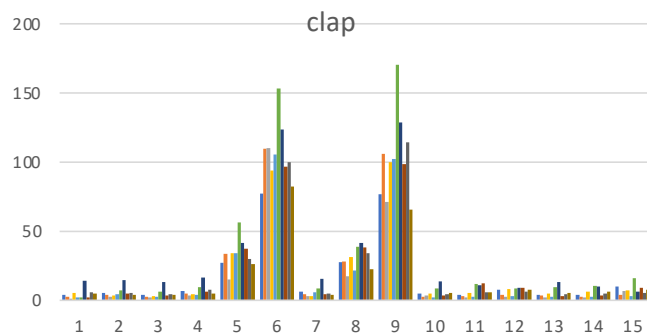
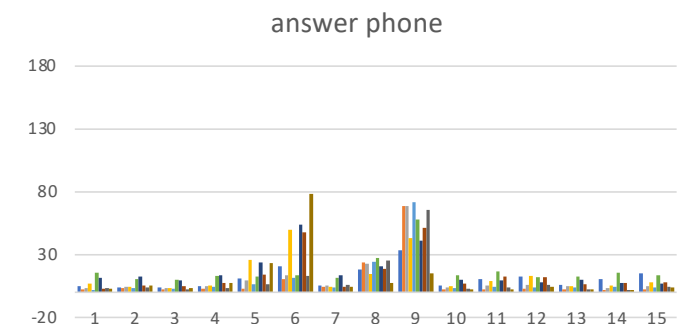
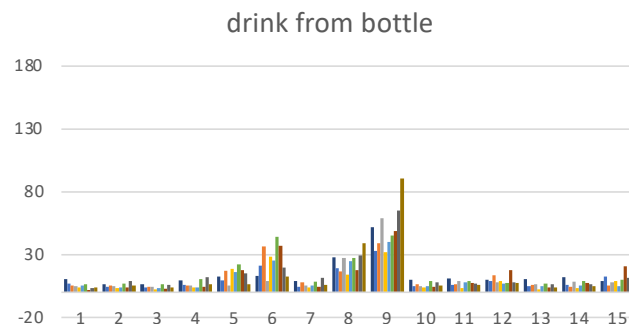
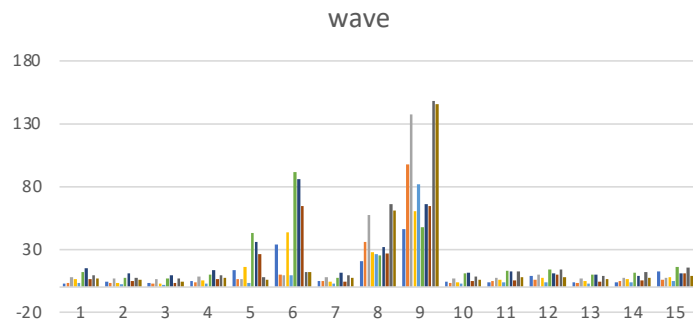


Actual	answer phone	bow	read watch	wave
answer phone	0	0	0	1
bow	0	1	0	0
clap	0	0	0	1
read watch	0	0	4	0
stand up	0	0	2	0
tight lace	0	0	0	1
wave	1	0	0	3



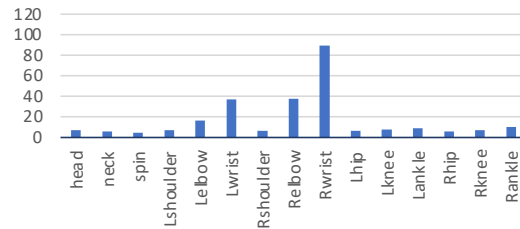
(70, 25, 15)

Pola perubahan keypoint pada setiap aktifitas dari 10 actor

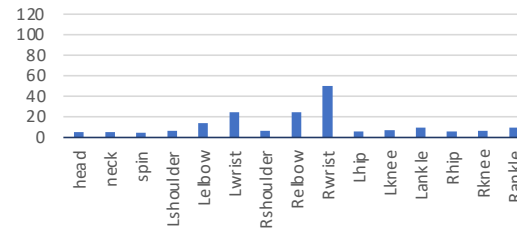


Pola perubahan keypoint pada setiap aktifitas (rata-rata dari 10 actor)

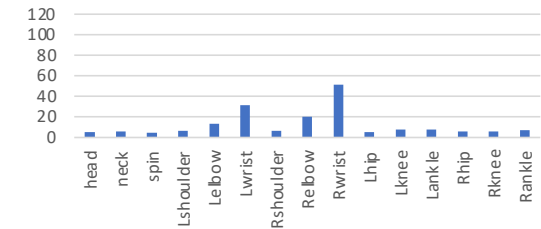
wave



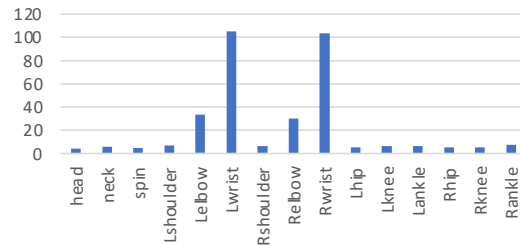
drink from a bottle



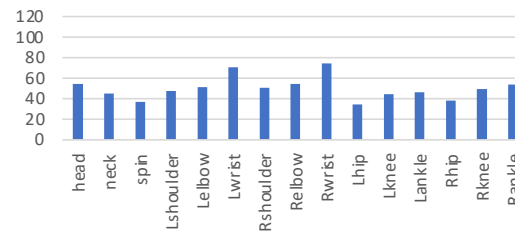
answer phone



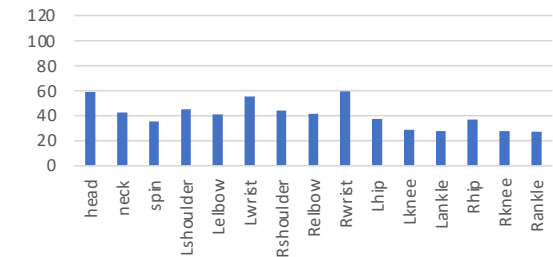
clap



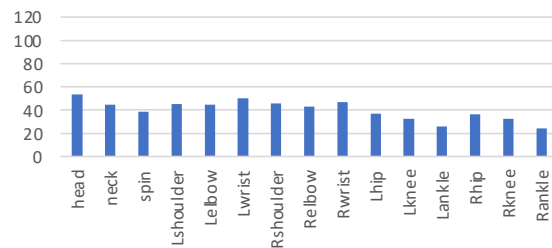
tight lace



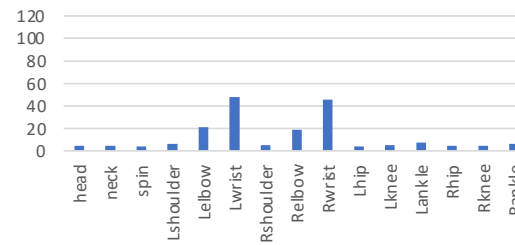
sit down



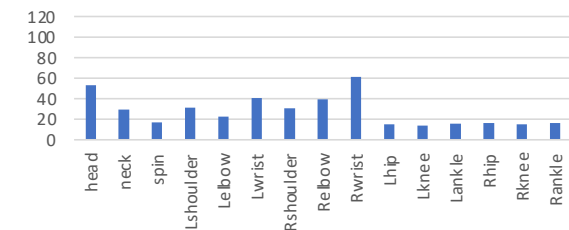
stand up

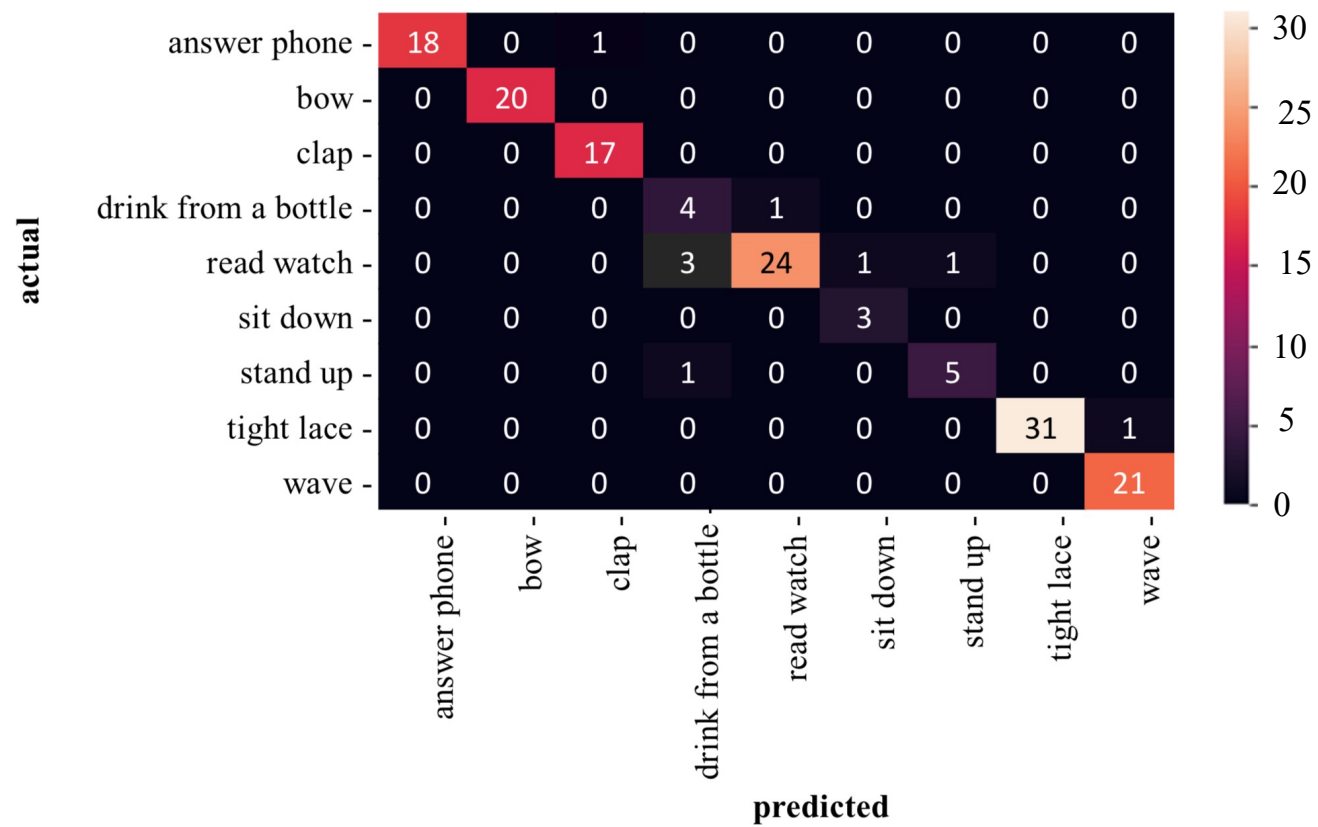


read a watch



bow





	Predicted Positif	Predicted Negatif	
Actual Positif	TP = 18	FN = 1	19
Actual Negatif	FP = 0	TN = 133	133
	18	134	152

Kami menghitung akurasi, presisi, recall, dan F1-score sebagai metrik evaluasi performa suatu model klasifikasi. Hasilnya sebagai berikut: akurasi=99,3421 %, presisi= 100 %, recall=0,94736842 , F1-score= 0,97297297. Kami menambahkan bagian ini dalam paper.

- Akurasi: Akurasi mengukur seberapa sering model kita membuat prediksi yang benar. Rumus akurasi adalah $(TP + TN) / (TP + TN + FP + FN)$.
- Presisi: Presisi mengukur seberapa sering model kita benar ketika ia memprediksi positif. Rumus presisi adalah $TP / (TP + FP)$.
- Recall: Recall mengukur seberapa sering model kita benar ketika kondisi aktualnya positif. Rumus recall adalah $TP / (TP + FN)$.

F1-score: F1-score adalah ukuran gabungan presisi dan recall. F1-score berguna ketika Anda ingin menyeimbangkan presisi dan recall ketika kondisi positif dan negatif tidak seimbang. Rumus F1-score adalah $2 * (presisi * recall) / (presisi + recall)$

Akurasi = $(TP+TN) / (TP+TN+FP+FN) = 18+133 / 18+133+1+0 = 99,3421 \%$

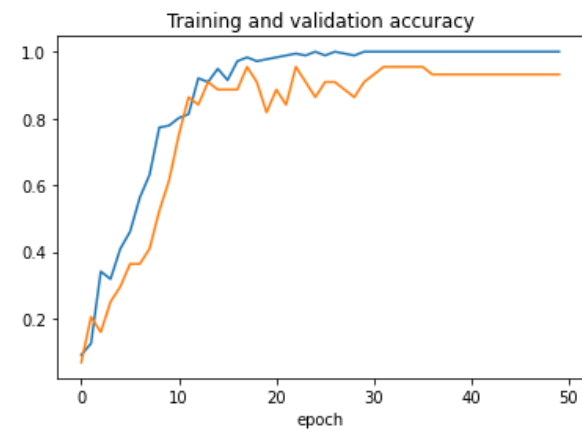
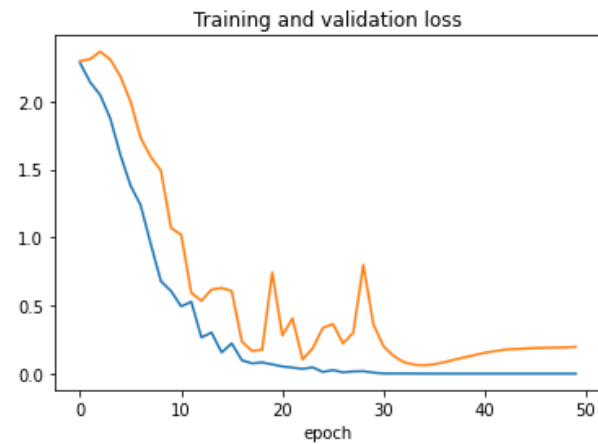
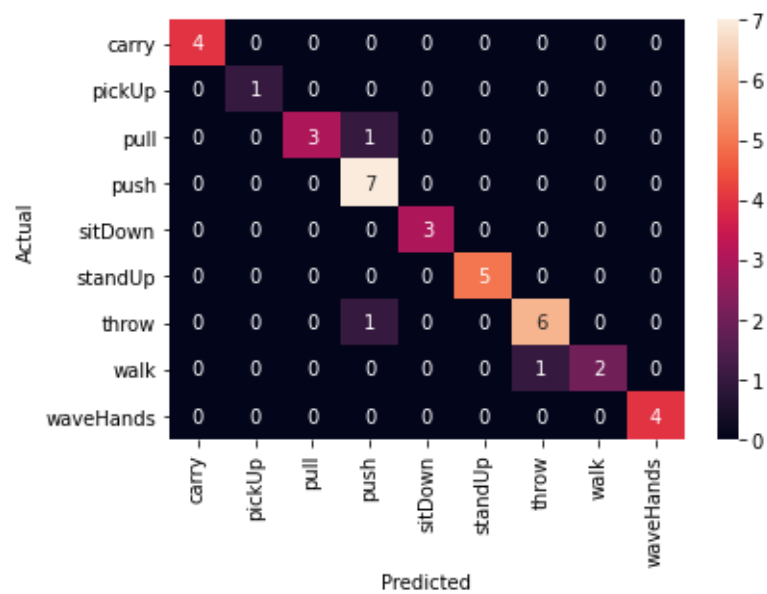
Presisi = $TP / (TP+FP) = 18 / 18+0 = 100 \%$

Recall = $TP / TP+FN = 18 / 18+1 = 0,94736842$

F1-score = $2 * (presisi * recall) / presisi + recall = 2 * 0.9473 \% * 100\% / 0.9474 \% + 100\% = 0,97297297$

akurasi	99.3421%
presisi	100%
recall	0.94736842
F1-score	0.97297297

loss: 6.7405e-05 - accuracy: 1.0000 - val_loss: 0.1964 - val_accuracy: 0.9318



Terima kasih