Effect of changing some parameters on CNN_signal (time-domain)

1- Effect of window length and overlapping

Other parameters are constant:

```
start_f = 8 #number of filters in the initial block
filter_h = 4 #filter's height
filter_w = 1 #filter's wide
depth = 4 # number of [conv -> ReLu -> maxpool] blocks

# number of filters is doubled in the next leyer

# lr is 1e-3


# Classifier
model.add(tf.keras.layers.Flatten())
model.add(tf.keras.layers.Dense(units=256, activation='relu'))
model.add(tf.keras.layers.Dropout(0.1))
model.add(tf.keras.layers.Dense(units=128, activation='relu'))
#model.add(tf.keras.layers.Dropout(0.1))
model.add(tf.keras.layers.Dense(units=32, activation='relu'))
#model.add(tf.keras.layers.Dropout(0.2))
model.add(tf.keras.layers.Dense(units=8, activation='softmax'))

history = model.fit(x=X_train, y=y_train, batch_size = 32, validation_spli
t=0.2, epochs=40)
```

Trial	Window(ms)	overlapping	Subj1 day1	Subj2 day1	Subj1 day2	Subj2 day2
1	250	1/2	97	97	96	96
1	200	1/3	98.2	96.3	95.4	96
2			97.65	95	96.2	95.2
3			97.65	96.6	95.4	95
1	250	2/3	98.4	97	96.2	95.6
2			98.58	97.5	97.1	95.5
3			97.5	96.6	96.2	96.5
1	150	¾	97.8	97.9	96.7	96
2			98.3	97.75	95.7	97
3			97.9	97.5	96.4	95
1	250	¾	98.6	97	96.5	96.3
2			98.93	98	96.5	96
3			98.6	98.4	96.5	97.2

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2- Effect of number of filters in each CNN layer

Other parameters are constant and like above.

Window length is 250ms and ¾ overlapping.

Trial	Increase by coefficient	First layer	Second layer	Third layer	Forth layer	Total parameters	Subj 1 day1 accuracy
1	5/2	8	20	50	125	10 million	98.96
2							98
3							98.47
1	2 (reference)	8	16	32	64	5 million	98.6
2							98.93
3							98.6
4							97.3 !!!
1	5/3	8	13	21	35	3 million	98.2
2							97.4
3							97.6
1	3/2 (selected)	8	12	18	24	2 million	98.96
2							98
3							98.6
4							96 !!!
1	5/4	8	10	12	15	1 million	98
2							98.3
3							97.8
4							97.1

3- Effect of increasing number of epochs on reference and selected.

Trial	CNN filter size	Batch size	Epochs	Sub1 day1 accuracy
1	reference	32	100	Below 98
1	Reference	32	200	Below 98
1	Reference	64	200	98.64
2				98.44
3				98
4				98
1	Selected	64	150	98.6
2				98.13
3				98.3
4				98.35
5				98.13