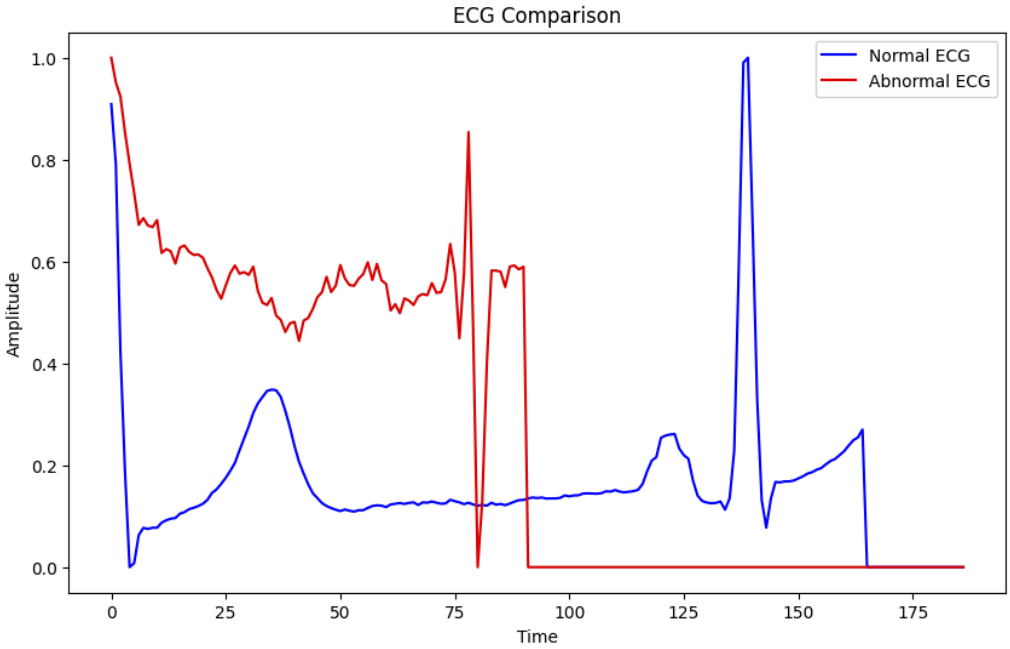
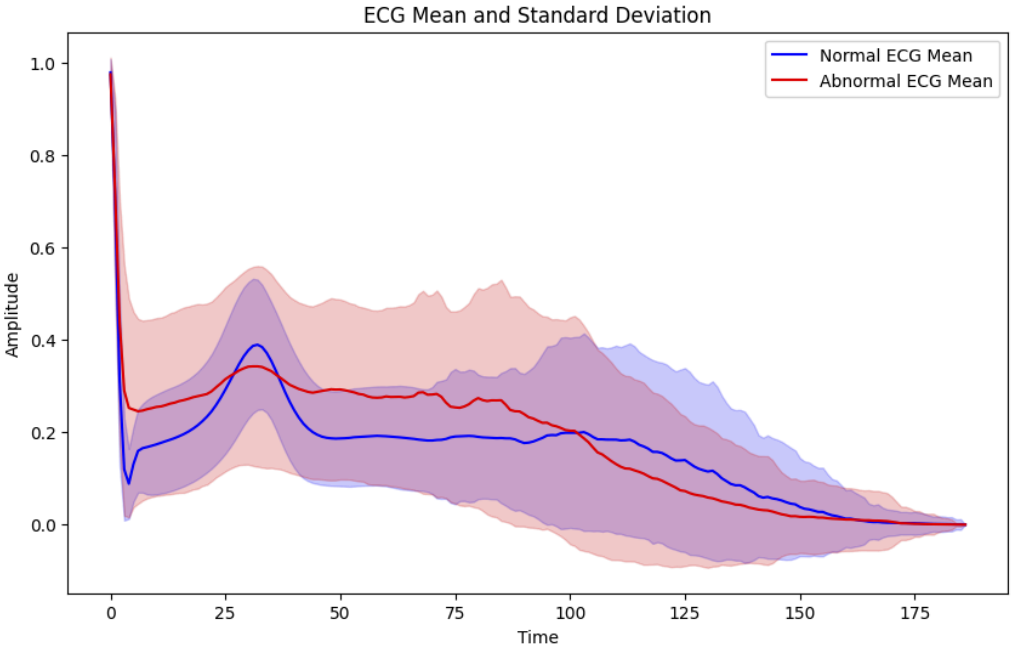
Tema ML 2 - Man Andrei Vlad

EDA



Comparatia intre primul exemplu de secventa (bataie a inimii) din fiecare dataset

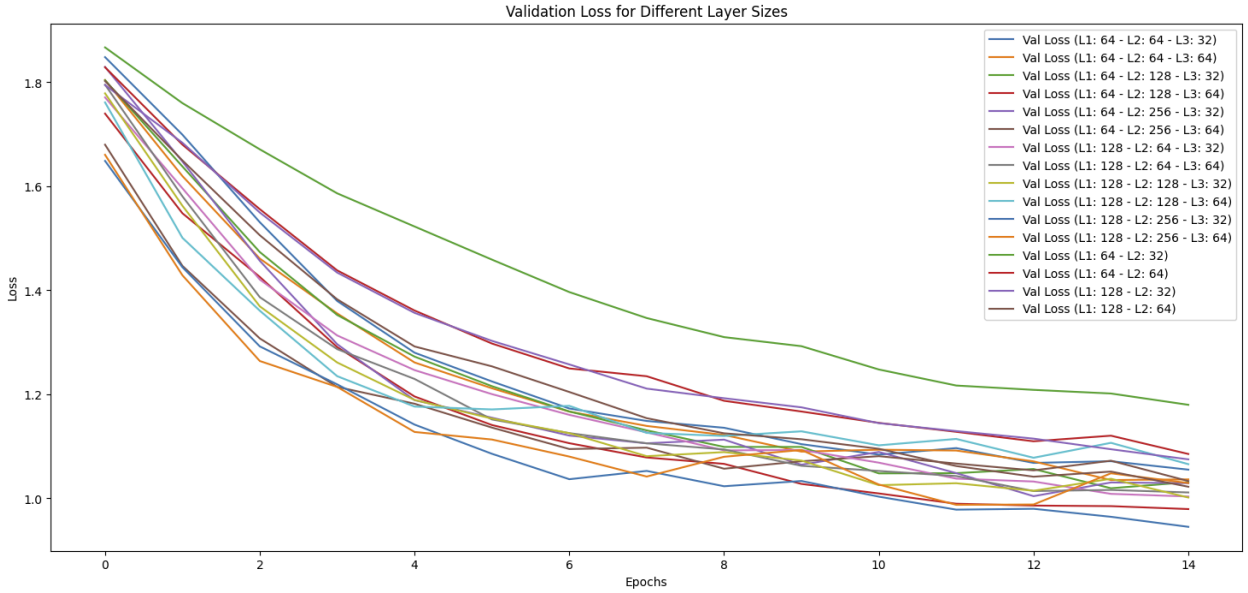


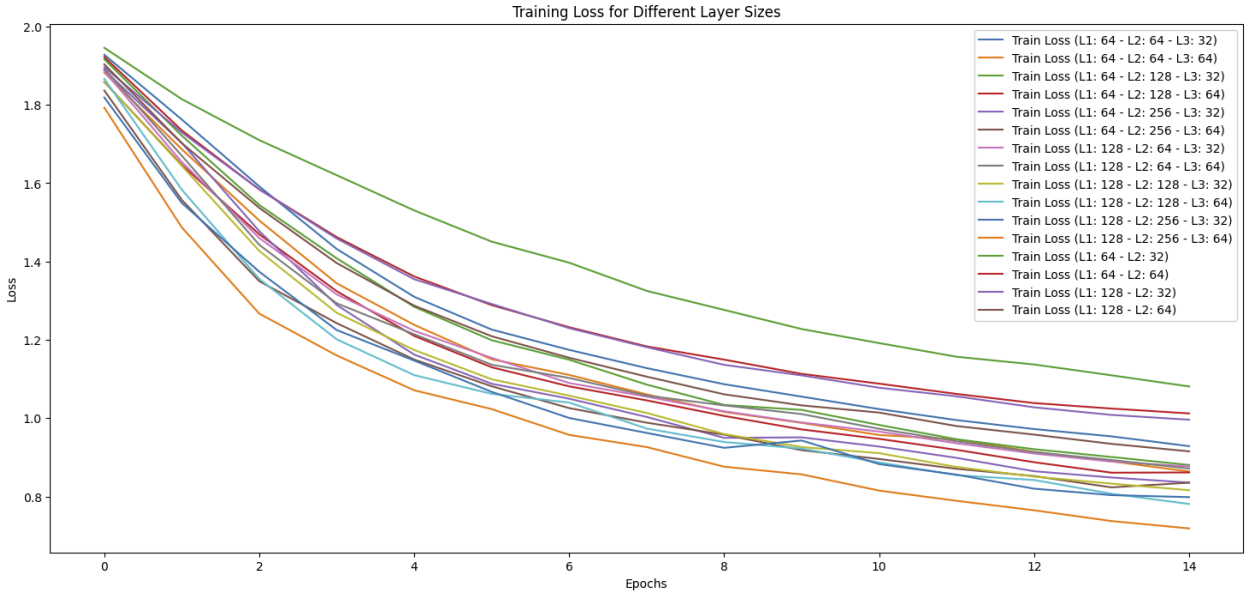
Comparatia intre media si deviatia valorilor normale si anormale.

MLP - Pacients

Am folosit:

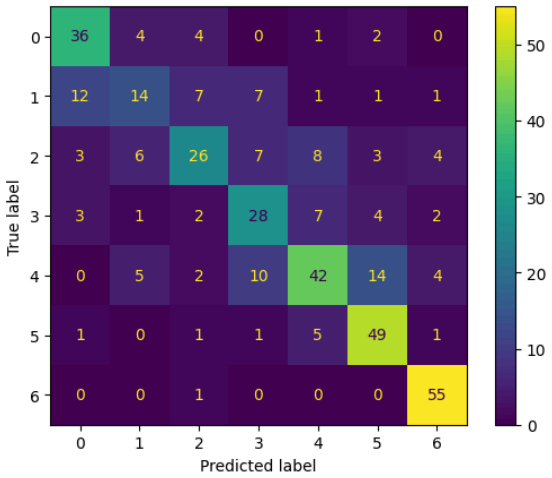
- Batch size: 48
- Epochs: 15
- Optimizer: Adam
- Loss: Categorical Crossentropy
- Learning rate: 1e-3

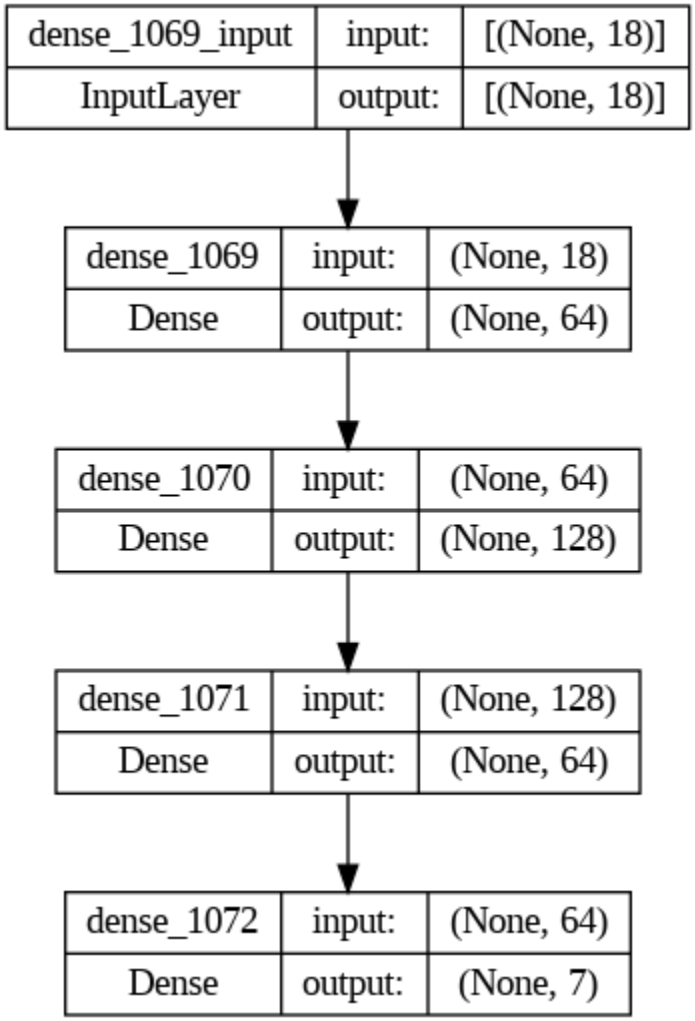




	model	precision	recall	f1	accuracy
L1: 64 - L2: 64 - L3: 32		0.603098	0.607792	0.600420	0.607792
L1: 64 - L2: 64 - L3: 64		0.627063	0.636364	0.622243	0.636364
L1: 64 - L2: 128 - L3: 32		0.620246	0.615584	0.607400	0.615584
L1: 64 - L2: 128 - L3: 64		0.675825	0.675325	0.673051	0.675325
L1: 64 - L2: 256 - L3: 32		0.685399	0.672727	0.670779	0.672727
L1: 64 - L2: 256 - L3: 64		0.653483	0.654545	0.651005	0.654545
L1: 128 - L2: 64 - L3: 32		0.637623	0.644156	0.633430	0.644156
L1: 128 - L2: 64 - L3: 64		0.634513	0.641558	0.623842	0.641558
L1: 128 - L2: 128 - L3: 32		0.652999	0.657143	0.648136	0.657143
L1: 128 - L2: 128 - L3: 64		0.649779	0.664935	0.651352	0.664935
L1: 128 - L2: 256 - L3: 32		0.676724	0.675325	0.671112	0.675325
L1: 128 - L2: 256 - L3: 64		0.656099	0.649351	0.642879	0.649351
L1: 64 - L2: 32		0.578689	0.592208	0.570881	0.592208
L1: 64 - L2: 64		0.610010	0.620779	0.607406	0.620779
L1: 128 - L2: 32		0.622480	0.641558	0.623130	0.641558
L1: 128 - L2: 64		0.648637	0.662338	0.650802	0.662338

Impactul este dat de numarul de layere in mare parte, dimensiunea acestora poate varia mai liber.

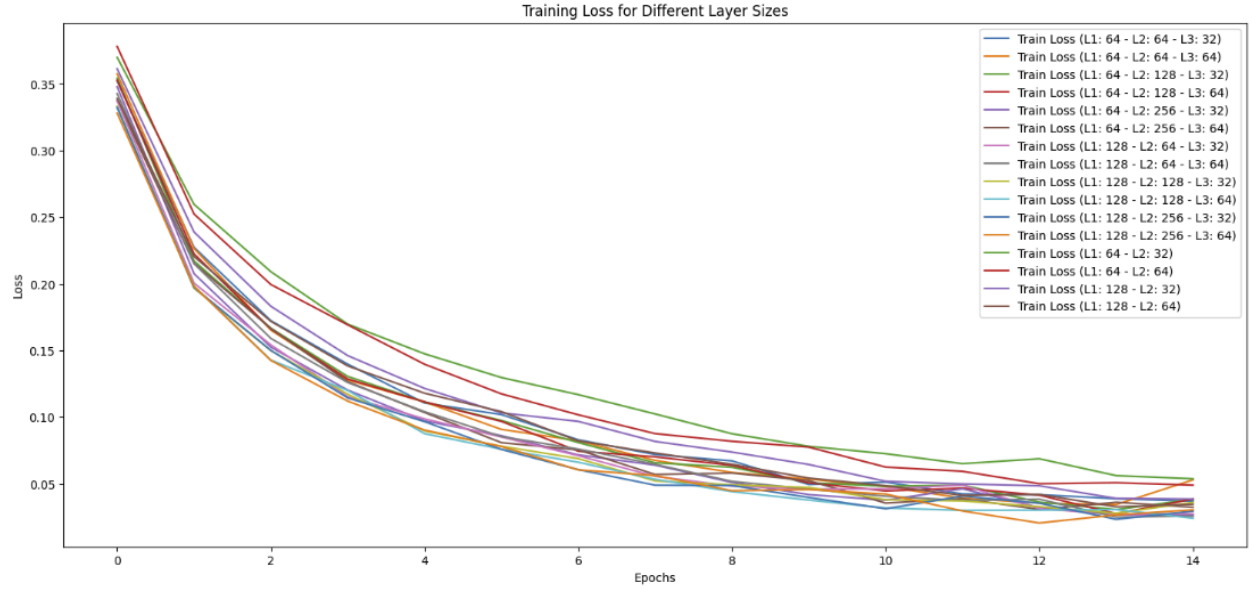


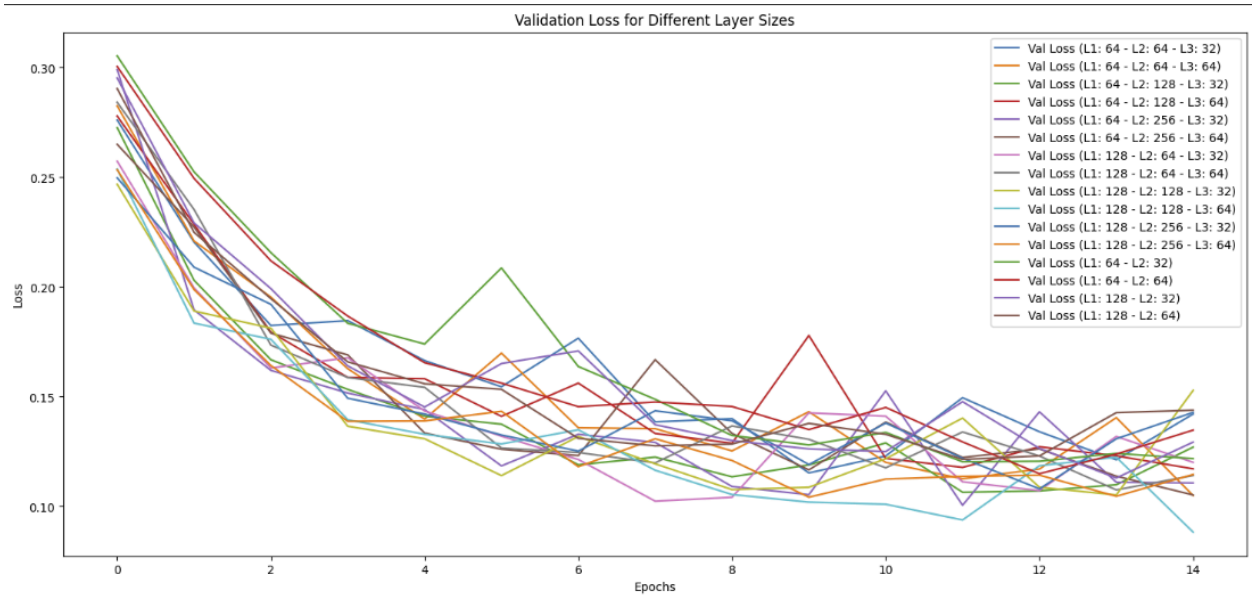

dense_1069_input
input:
[(None, 18)]
InputLayer
output:
[(None, 18)]
dense_1069
input:
(None, 18)
Dense
output:
(None, 64)
dense_1070
input:
(None, 64)
Dense
output:
(None, 128)
dense_1071
input:
(None, 128)
Dense
output:
(None, 64)
dense_1072
input:
(None, 64)
Dense
output:
(None, 7)

MLP - ECG

Am folosit:

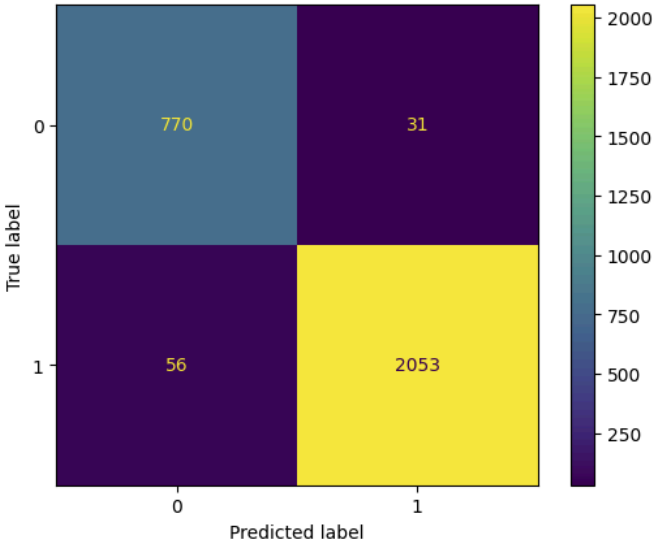
- Batch size: 48
- Epochs: 15
- Optimizer: Adam
- Loss: Binary Crossentropy
- Learning rate: 1e-3

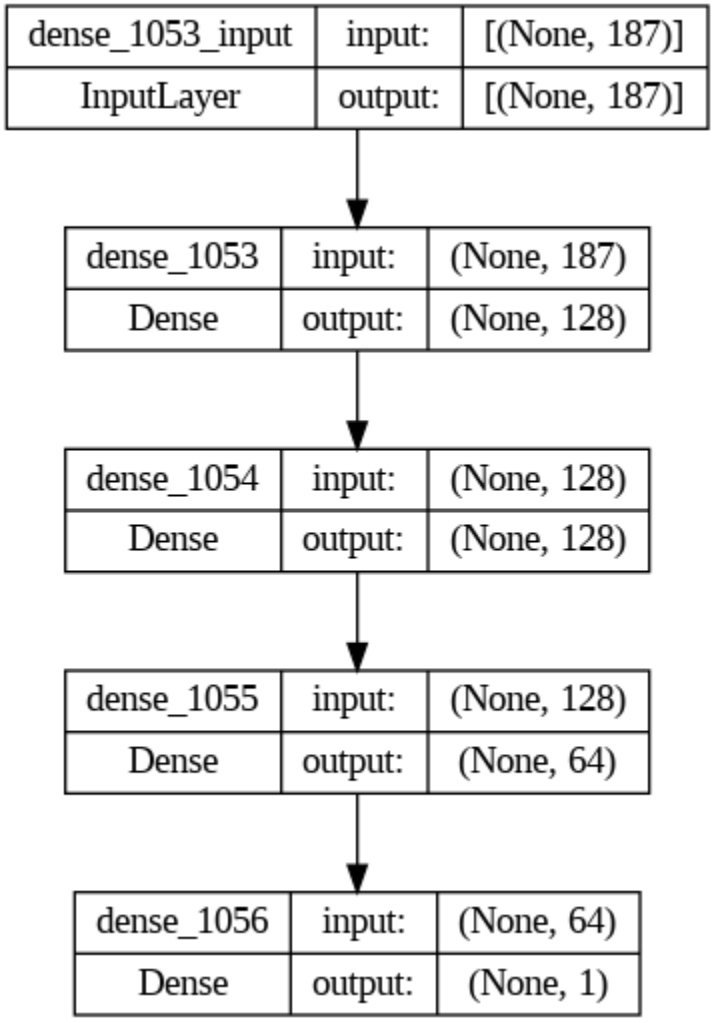




model	precision	recall	f1	accuracy
L1: 64 - L2: 64 - L3: 32	0.963047	0.963230	0.963001	0.963230
L1: 64 - L2: 64 - L3: 64	0.963833	0.963918	0.963868	0.963918
L1: 64 - L2: 128 - L3: 32	0.960057	0.959107	0.958286	0.959107
L1: 64 - L2: 128 - L3: 64	0.962199	0.962199	0.962199	0.962199
L1: 64 - L2: 256 - L3: 32	0.966963	0.966667	0.966774	0.966667
L1: 64 - L2: 256 - L3: 64	0.964857	0.964948	0.964894	0.964948
L1: 128 - L2: 64 - L3: 32	0.965144	0.965292	0.965061	0.965292
L1: 128 - L2: 64 - L3: 64	0.964839	0.964948	0.964880	0.964948
L1: 128 - L2: 128 - L3: 32	0.953397	0.952921	0.952043	0.952921
L1: 128 - L2: 128 - L3: 64	0.972406	0.972509	0.972399	0.972509
L1: 128 - L2: 256 - L3: 32	0.961668	0.961856	0.961586	0.961856
L1: 128 - L2: 256 - L3: 64	0.969010	0.969072	0.969036	0.969072
L1: 64 - L2: 32	0.960109	0.958763	0.959126	0.958763
L1: 64 - L2: 64	0.953568	0.953265	0.953390	0.953265
L1: 128 - L2: 32	0.954007	0.954296	0.954049	0.954296
L1: 128 - L2: 64	0.958982	0.958419	0.958615	0.958419

Impactul este dat de numarul de layere in mare parte, dimensiunea acestora poate varia mai liber.

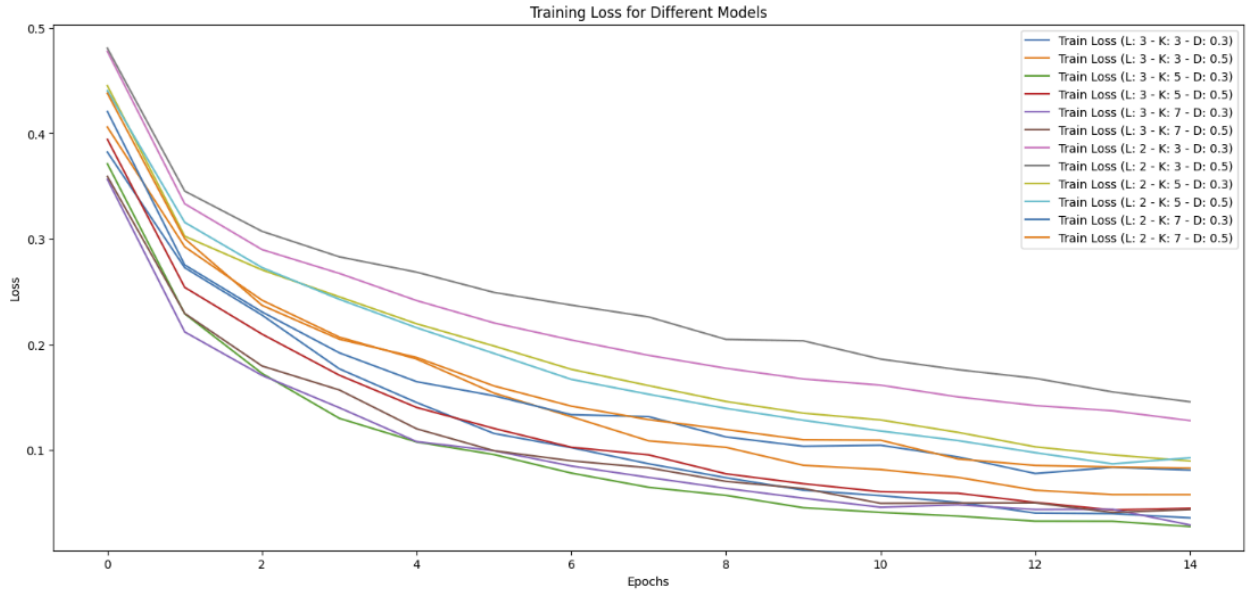

770
31
56
2053
0
1
True label
0
1
Predicted label
2000
1750
1500
1250
1000
750
500
250

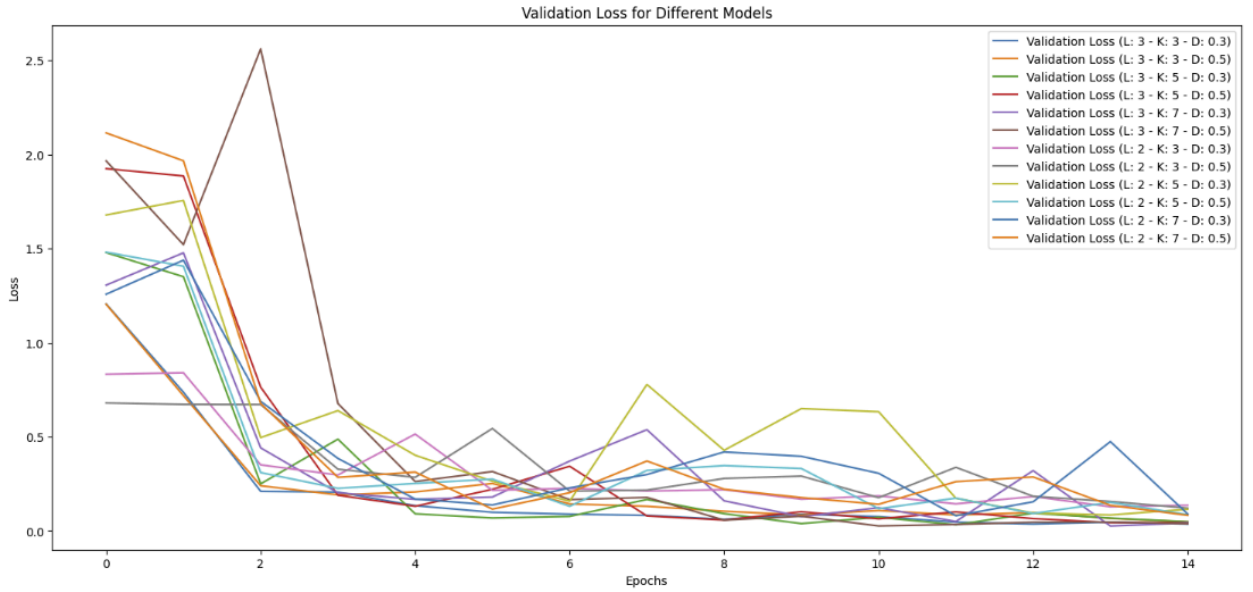

dense_1053_input
input:
[(None, 187)]
InputLayer
output:
[(None, 187)]
dense_1053
input:
(None, 187)
Dense
output:
(None, 128)
dense_1054
input:
(None, 128)
Dense
output:
(None, 128)
dense_1055
input:
(None, 128)
Dense
output:
(None, 64)
dense_1056
input:
(None, 64)
Dense
output:
(None, 1)

CONV - ECG

Am folosit:

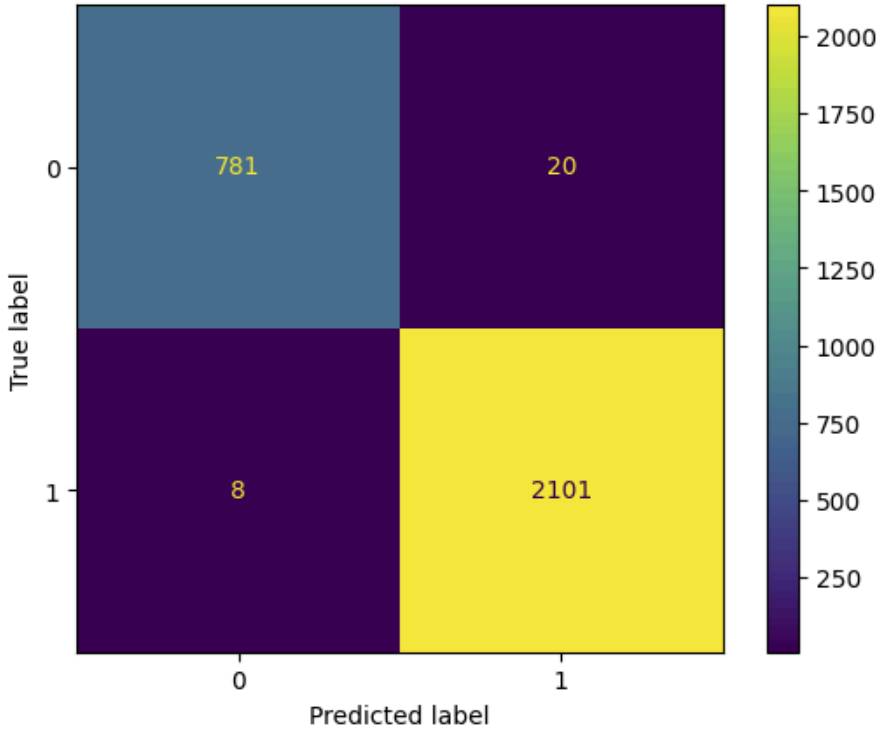
- Batch size: 48
- Epochs: 15
- Optimizer: Adam
- Loss: Binary Crossentropy
- Learning rate: 1e-3
- Kernel Size: 3, 5, 7
- Dropout: 0.3, 0.5

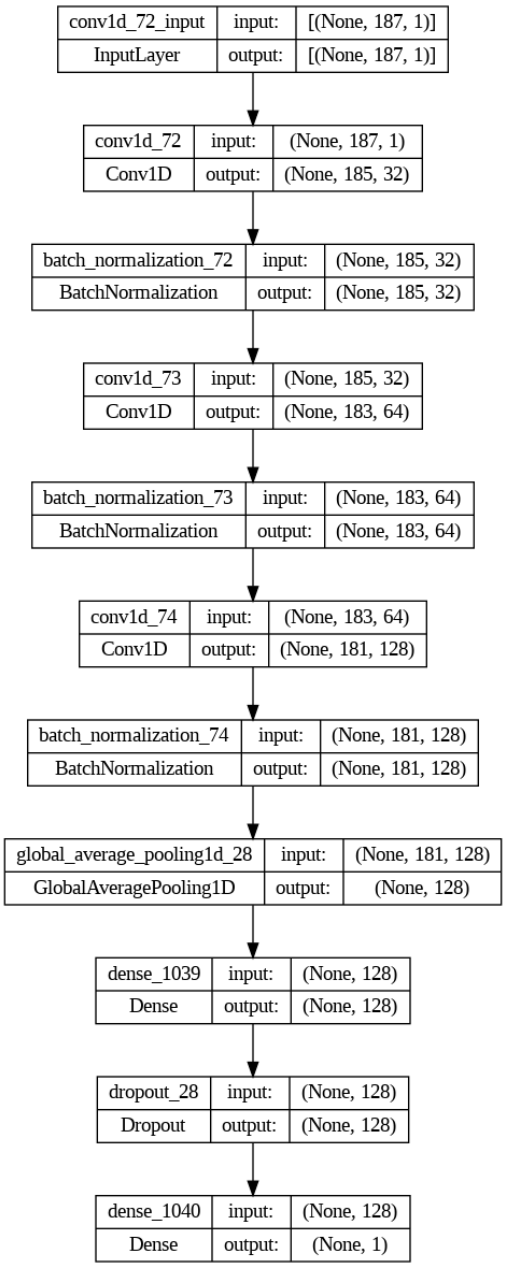




	model	precision	recall	f1	accuracy
L: 3 - K: 3 - D: 0.3		0.987640	0.987629	0.987634	0.987629
L: 3 - K: 3 - D: 0.5		0.981743	0.981787	0.981740	0.981787
L: 3 - K: 5 - D: 0.3		0.985230	0.985223	0.985162	0.985223
L: 3 - K: 5 - D: 0.5		0.983957	0.983849	0.983742	0.983849
L: 3 - K: 7 - D: 0.3		0.986029	0.985911	0.985946	0.985911
L: 3 - K: 7 - D: 0.5		0.986047	0.985911	0.985817	0.985911
L: 2 - K: 3 - D: 0.3		0.950258	0.949485	0.949759	0.949485
L: 2 - K: 3 - D: 0.5		0.958379	0.957388	0.956504	0.957388
L: 2 - K: 5 - D: 0.3		0.953021	0.953265	0.952786	0.953265
L: 2 - K: 5 - D: 0.5		0.967241	0.965979	0.966284	0.965979
L: 2 - K: 7 - D: 0.3		0.964623	0.963230	0.962441	0.963230
L: 2 - K: 7 - D: 0.5		0.968613	0.967698	0.967936	0.967698

Impactul cel mai mare il are numarul de layere convvolutionale.




conv1d_72_input | input: | [(None, 187, 1)]
InputLayer | output: | [(None, 187, 1)]
conv1d_72 | input: | (None, 187, 1)
Conv1D | output: | (None, 185, 32)
batch_normalization_72 | input: | (None, 185, 32)
BatchNormalization | output: | (None, 185, 32)
conv1d_73 | input: | (None, 185, 32)
Conv1D | output: | (None, 183, 64)
batch_normalization_73 | input: | (None, 183, 64)
BatchNormalization | output: | (None, 183, 64)
conv1d_74 | input: | (None, 183, 64)
Conv1D | output: | (None, 181, 128)
batch_normalization_74 | input: | (None, 181, 128)
BatchNormalization | output: | (None, 181, 128)
global_average_pooling1d_28 | input: | (None, 181, 128)
GlobalAveragePooling1D | output: | (None, 128)
dense_1039 | input: | (None, 128)
Dense | output: | (None, 128)
dropout_28 | input: | (None, 128)
Dropout | output: | (None, 128)
dense_1040 | input: | (None, 128)
Dense | output: | (None, 1)

Grafic amuzant