

Accuracy	F1	Initialization	Batch	Epochs	Architecture
0,10	0,00	Default algorithm	32	epochs_200	4 layers
0,08	0,00	Default algorithm	32	epochs_200	4 layers
0,32	0,15	Default algorithm	32	epochs_200	4 layers
0,09	0,00	Default algorithm	32	epochs_200	4 layers
0,04	0,00	Default algorithm	32	epochs_200	4 layers
0,64	0,52	Default algorithm	64	epochs_200	4 layers
0,10	0,01	Default algorithm	64	epochs_200	4 layers
0,40	0,29	Default algorithm	64	epochs_200	4 layers
0,03	0,00	Default algorithm	64	epochs_200	4 layers
0,46	0,35	Default algorithm	64	epochs_200	4 layers
0,10	0,00	Default algorithm	32	epochs_500	4 layers
0,08	0,00	Default algorithm	32	epochs_500	4 layers
0,46	0,32	Default algorithm	32	epochs_500	4 layers
0,09	0,00	Default algorithm	32	epochs_500	4 layers
0,04	0,00	Default algorithm	32	epochs_500	4 layers
0,68	0,61	Default algorithm	64	epochs_500	4 layers
0,10	0,01	Default algorithm	64	epochs_500	4 layers
0,64	0,59	Default algorithm	64	epochs_500	4 layers
0,03	0,00	Default algorithm	64	epochs_500	4 layers
0,69	0,64	Default algorithm	64	epochs_500	4 layers
0,65	0,57	Pre-trained CAE	32	epochs_200	4 layers
0,46	0,36	Pre-trained CAE	32	epochs_200	4 layers
0,62	0,54	Pre-trained CAE	32	epochs_200	4 layers
0,62	0,52	Pre-trained CAE	32	epochs_200	4 layers
0,59	0,49	Pre-trained CAE	32	epochs_200	4 layers
0,40	0,28	Pre-trained CAE	64	epochs_200	4 layers
0,39	0,30	Pre-trained CAE	64	epochs_200	4 layers
0,09	0,00	Pre-trained CAE	64	epochs_200	4 layers
0,04	0,00	Pre-trained CAE	64	epochs_200	4 layers
0,57	0,46	Pre-trained CAE	64	epochs_200	4 layers
0,63	0,56	Pre-trained CAE	32	epochs_500	4 layers
0,65	0,59	Pre-trained CAE	32	epochs_500	4 layers
0,68	0,64	Pre-trained CAE	32	epochs_500	4 layers
0,64	0,56	Pre-trained CAE	32	epochs_500	4 layers
0,64	0,56	Pre-trained CAE	32	epochs_500	4 layers
0,67	0,57	Pre-trained CAE	64	epochs_500	4 layers
0,62	0,52	Pre-trained CAE	64	epochs_500	4 layers
0,40	0,27	Pre-trained CAE	64	epochs_500	4 layers
0,04	0,00	Pre-trained CAE	64	epochs_500	4 layers
0,68	0,60	Pre-trained CAE	64	epochs_500	4 layers
0,63	0,59	Default algorithm	32	epochs_200	5 layers
0,59	0,53	Default algorithm	32	epochs_200	5 layers
0,63	0,58	Default algorithm	32	epochs_200	5 layers
0,63	0,58	Default algorithm	32	epochs_200	5 layers
0,65	0,61	Default algorithm	32	epochs_200	5 layers
0,67	0,61	Default algorithm	64	epochs_200	5 layers
0,65	0,58	Default algorithm	64	epochs_200	5 layers

0,69	0,62	Default algorithm	64	epochs_200	5 layers
0,65	0,58	Default algorithm	64	epochs_200	5 layers
0,69	0,61	Default algorithm	64	epochs_200	5 layers
0,65	0,59	Default algorithm	32	epochs_500	5 layers
0,62	0,57	Default algorithm	32	epochs_500	5 layers
0,62	0,59	Default algorithm	32	epochs_500	5 layers
0,59	0,55	Default algorithm	32	epochs_500	5 layers
0,60	0,55	Default algorithm	32	epochs_500	5 layers
0,67	0,60	Default algorithm	64	epochs_500	5 layers
0,66	0,60	Default algorithm	64	epochs_500	5 layers
0,67	0,62	Default algorithm	64	epochs_500	5 layers
0,65	0,59	Default algorithm	64	epochs_500	5 layers
0,70	0,64	Default algorithm	64	epochs_500	5 layers
0,73	0,68	Pre-trained CAE	32	epochs_200	5 layers
0,70	0,66	Pre-trained CAE	32	epochs_200	5 layers
0,75	0,68	Pre-trained CAE	32	epochs_200	5 layers
0,66	0,63	Pre-trained CAE	32	epochs_200	5 layers
0,75	0,69	Pre-trained CAE	32	epochs_200	5 layers
0,76	0,71	Pre-trained CAE	64	epochs_200	5 layers
0,71	0,67	Pre-trained CAE	64	epochs_200	5 layers
0,75	0,69	Pre-trained CAE	64	epochs_200	5 layers
0,71	0,68	Pre-trained CAE	64	epochs_200	5 layers
0,77	0,74	Pre-trained CAE	64	epochs_200	5 layers
0,72	0,66	Pre-trained CAE	32	epochs_500	5 layers
0,73	0,70	Pre-trained CAE	32	epochs_500	5 layers
0,76	0,72	Pre-trained CAE	32	epochs_500	5 layers
0,70	0,68	Pre-trained CAE	32	epochs_500	5 layers
0,78	0,74	Pre-trained CAE	32	epochs_500	5 layers
0,78	0,75	Pre-trained CAE	64	epochs_500	5 layers
0,69	0,64	Pre-trained CAE	64	epochs_500	5 layers
0,75	0,73	Pre-trained CAE	64	epochs_500	5 layers
0,71	0,68	Pre-trained CAE	64	epochs_500	5 layers
0,75	0,71	Pre-trained CAE	64	epochs_500	5 layers

Supplementary Table S2 - Classification performance (Accuracy and F1-score) of models trained on BrainPedia validation dataset in a 5-fold cross-validation scheme with different hyperparameters (batch size, epochs, architecture).

Best model for the Default algorithm initialization is a 5-layers architecture, a batch size of 64 for 500 epochs.

For the pre-trained CAE, best model was the one with a 5-layers architecture, a batch size of 64, 200 epochs.