

TABLE 1 Hyperparameter space for DNNs.

Hyperparameter	Values
# nodes for first hidden layer	30, 40, 50, 75, 100, 120, 150
# hidden layers	4, 5, 6, 8, 10, 15
batch size	8, 16, 32, 64, 128
activation function	ReLu, sigmoid, tanh, SELU, ELU
optimizer	SGD, RMSprop, Adam, Adadelata, Adagrad, Adamax, Nadam, Ftrl
learning rate	10^{-5} , 10^{-4} , 10^{-3} , 10^{-2}
# epochs	100, 300, 400, 600, 1000, 1500
preprocessing method	StandartScaler, MinMaxScaler
regularization function	None, L2, L1, Dropout
regularization rate	10^{-5} , 10^{-4} , 10^{-3} , 10^{-2}
dropout rate	0.2, 0.3, 0.4, 0.5
weight initializer	Xavier Normal or Uniform, He Normal or Uniform, Random Normal or Uniform, Ones

TABLE 2 Chosen hyperparameter combinations.

Hyperparameter	DNN _{FeFeB}	DNN _{FeFeB-Fe}
# nodes for hidden layers	120, 108, 96, 84, 72, 60	100, 100, 100, 100
batch size	32	32
activation function	ReLu	ELU
optimizer	Adamax	Adamax
learning rate	10^{-3}	10^{-3}
# epochs	400	1500
preprocessing method	StandartScaler	StandartScaler
regularization function	None	None
weight initializer	Xavier Normal	Xavier Normal