

Appendix A: models from the final ensemble

	Data	Architecture	Public (min-max)	Private (min-max)
1	6 bands + std; 1 min windows; 9 min overlap	C1: 32@1x10, ReLU C2: 64@1x5, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.80872	0.77182
2	6 bands + std; 1 min windows	C1: 16@1x10, ReLU C2: 32@1x5, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.80614	0.76014
3	6 bands + std; 2 min windows; 4 min overlap	C1: 32@1x5, ReLU C2: 64@1x2, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.80533	0.79296
4	8 bands + std; 2 min windows; 4 min overlap	C1: 16@1x5, ReLU C2: 32@1x5, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.80192	0.78114
5	8 bands + std; 1 min windows; 8 min overlap	C1: 16@1x10, ReLU C2: 32@1x5, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.79964	0.77905
6	6 bands + std; 1 min windows	C1: 16@1x10, ReLU C2: 32@1x5, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.5 LogReg: dropout 0.5	0.79886	0.76305

	Data	Architecture	Public (min-max)	Private (min-max)
7	6 bands + std; 1 min windows; 8 min overlap	C1: 16@1x10, ReLU C2: 32@1x5, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.79882	0.76817
8	8 bands + std; 2 min windows; 4 min overlap	C1: 16@1x5, ReLU C2: 32@1x4, ReLU GP3 F4: 1024, tanh, dropout 0.3 LogReg: dropout 0.6	0.79865	0.78916
9	6 bands + std; 30 sec windows	C1: 16@1x20, ReLU C2: 32@1x10, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.79833	0.77090
10	6 bands + std; 2 min windows	C1: 16@1x5, ReLU C2: 32@1x5, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.78967	0.76209
11	8 bands + std; 30 sec windows; 5 min overlap	C1: 16@1x20, ReLU C2: 32@1x10, stride 2, ReLU GP3 F4: 512, tanh, dropout 0.3 LogReg: dropout 0.6	0.78612	0.76133

Table 1: Convnet models from the final ensemble

Appendix B: effect of the calibration schemes

Calibration Model	No calibration	Softmax	Min-max	Median
ensemble	0.78572	0.74418	0.79560	0.75959
single convnet	0.76611	0.74449	0.77291	0.78146
LDA 8 bands	0.74766	0.79679	0.74418	0.78590

Table 2: Global AUC calculated over the test set for model-calibration pairs.

Appendix C: overview of the top 5 models

1. Medrr

classifier: ensemble of regression models

features in 15 sec. windows:

- energy average and standard deviation for each channel
- log of spectral energy in different frequency bands for each channel
- spectral energy and total energy in different frequency bands for the average of all the channels
- correlation of energy in frequency bands between channels
- nonlinear transformations for each feature

postprocessing: find pairs of clips that are likely to be together in time; for each pair predict maximum of their posterior probabilities

2. QMSDP

classifier: weighted average of Generalized Linear Model with Lasso or elastic net regularization, Random Forest and a bagged set of linear SVMs

features in 10-60 windows:

- spectrum and Shannon's entropy at 6 frequency bands
- spectral edge power of 50% power up to 40Hz
- Shannon's entropy at dyadic frequency bands
- spectrum correlation across channels at dyadic frequency bands
- time series correlation matrix and its eigenvalues
- fractal dimensions
- Hjorth parameters
- skewness and kurtosis
- avg. DFT power in hand-picked bands
- time series variance

postprocessing: for each subject take the median of predictions, subtract it from the scores, then divided the scores by 2 and add 0.5

3. Birchwood

classifier: SVM

features in 50 sec. windows:

- log of spectral power in 18 frequency bands from 1 to 50 Hz
- time series correlation matrix and its eigenvalues
- frequency correlation matrix and eigenvalues

postprocessing: a percentage projection based on the assumption that the test and train datasets are similar

4. ESAI CEU-UCH

classifier: Bayesian model combination of models based on deep ANNs and K-nearest neighbors

features in 60 sec. windows:

- FFT features decorrelated by PCA
- eigenvalues of a correlation matrix for time series and its derivative

- previous for the whole clip (10 min)
- mean and variance for 10 min original clip

5. Michael Hills

classifier: SVM

features in 75 sec.windows:

- time series correlation matrix and eigenvalues
- frequency correlation matrix and eigenvalues
- log of average power for various frequency bands
- power spectral entropy
- higuchi fractal dimension
- petrosian fractal dimension
- hurst exponent