DEEP CONVOLUTIONAL AND RECURRENT NEURAL NETWORKS FOR INTERPRETABLE ANALYSIS OF EEG SLEEP STAGE SCORING

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ABSTRACT

Index Terms— Convulutional Neural Networks, Recurrent Neural Networks, Sleep Stage Scoring, Computer Vision and Pattern Recognition.

1. INTRODUCTION

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CCN and RNN LSTM

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6. ACKNOWLEDGMENT

7. REFERENCES

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8. REFERENCES

[1] C.D. Jones, A.B. Smith, and E.F. Roberts, "Article title," in *Proceedings Title*. IEEE, 2003, vol. II, pp. 803–806.

9. APPENDIX

		Predicted						Normalized pred. (in %)						Per-class metric (in %)			
		W	N1	N2	N3	N4	R	W	N1	N2	N3	N4	R	Pre.	Sen.	F_1	Acc.
CNN	W	495	145	29	11	1	20	71	21	4	2	0	3	91	71	80	93
	N1	25	211	43	0	0	62	7	62	13	0	0	18	43	62	51	89
	N2	4	51	1313	104	17	68	0	3	84	7	1	4	91	84	88	90
	N3	0	2	11	164	64	0	0	1	5	68	27	0	49	68	57	93
	N4	0	0	0	54	91	0	0	0	0	37	63	0	53	63	57	96
	R	17	80	46	0	0	591	2	11	6	0	0	81	80	81	80	92
RNN	W	578	39	26	7	1	43	83	6	4	1	0	6	89	83	86	95
	N1	38	107	64	0	0	132	11	31	19	0	0	39	55	31	40	91
	N2	8	13	1314	102	28	92	1	1	84	7	2	6	90	84	87	89
	N3	3	0	18	125	95	0	1	0	7	52	39	0	43	52	47	92
	N4	0	0	1	60	84	0	0	0	1	41	58	0	40	58	48	95
	R	19	36	43	0	0	636	3	5	6	0	0	87	70	87	78	90

Table 1. My caption

NN	Precision	Sensitivity	F_1-score	Accuracy
CNN	65.4-**67.9**-70.4	70.9-**71.3**-71.8	67.5-**68.8**-70.0	92.3-**92.3**-92.4
RNN	61.9-**64.6**-67.2	63.2-**65.9**-68.6	61.8-**64.2**-66.6	92.2-**92.2**-92.2

Table 2. My caption