

Model	dev	eval
Attention	40.3	37.8
MTL	38.7	36.6
+ joint decoding (rescoring)	35.9	34.2
+ joint decoding (one-pass)	35.5	33.9
+ RNN-LM (separate)	34.8	33.3
+ RNN-LM (joint training)	33.6	32.1
MTL+joint dec. (speed perturb., one-pass)	32.1	31.4
+ MTL-large	31.0	29.9
+ RNN-LM (separate)	30.2	29.2
MTL+joint dec. (speed perturb., one-pass)	-	-
+ VGG net	30.0	28.9
+ RNN-LM (separate)	29.1	28.0
DNN-hybrid	-	35.9
LSTM-hybrid (speed perturb.)	-	33.5
CTC with language model	-	34.8
TDNN-hybrid, lattice-free MMI (speed perturb.)	-	28.2