

Supplementary material

1. Experimental results

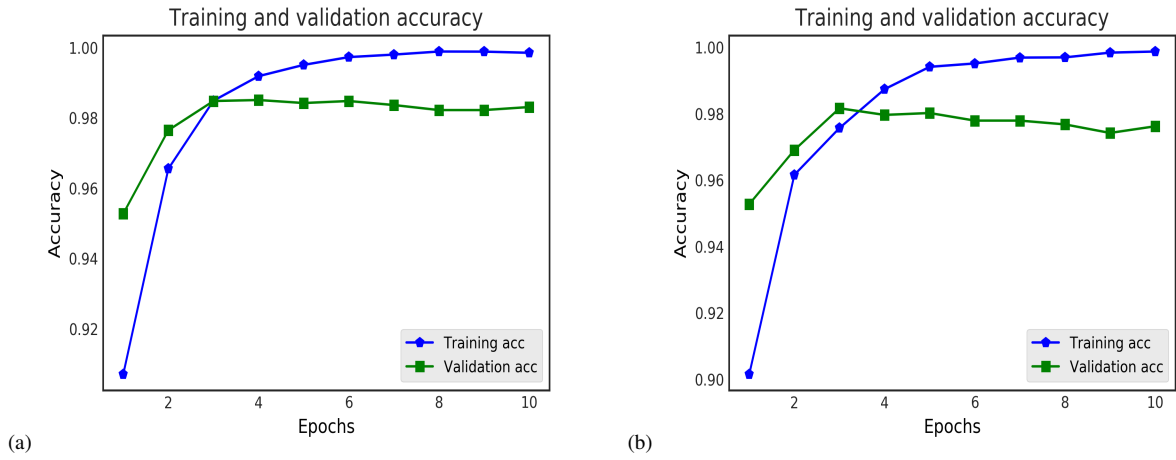


Fig. 1. Training and validation accuracy (a) Reddit (b) CEASE-v2.0

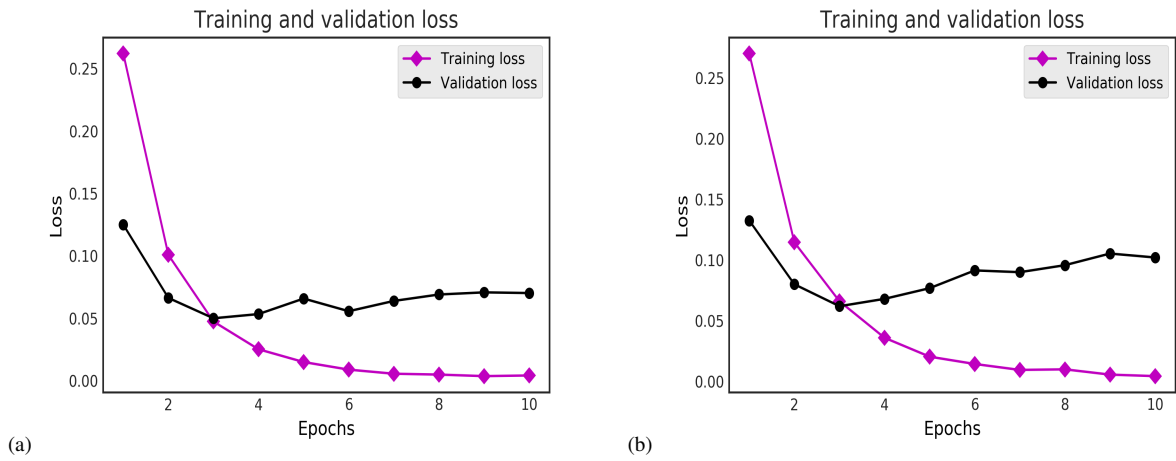


Fig. 2. Loss function (a) Reddit (b) CEASE-v2.0

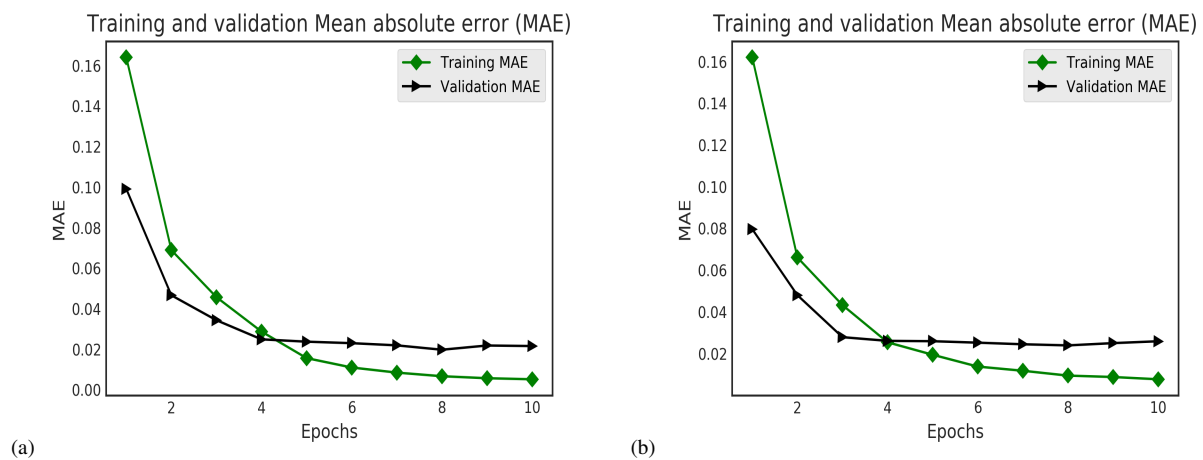


Fig. 3. Mean absolute error (a) Reddit (b) CEASE-v2.0

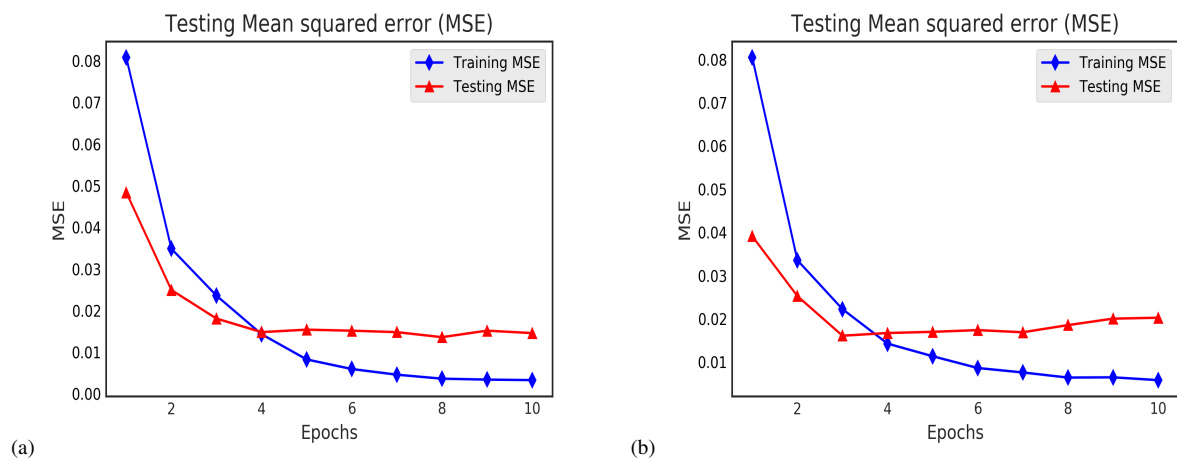


Fig. 4. Mean squared error (a) Reddit (b) CEASE-v2.0

Table 1. Evaluation of the suggested model's effectiveness in relation to reference baseline models.

Model	Pretraining	Reddit				CEASE-v2.0			
		F	A	P	R	F	A	P	R
BiGRU	BERT	0.828	0.883	0.834	0.820	0.828	0.870	0.828	0.815
	XLNet	0.830	0.890	0.840	0.828	0.844	0.895	0.840	0.833
	Llama 3.1	0.884	0.903	0.890	0.876	0.880	0.900	0.882	0.855
LSTM	BERT	0.820	0.892	0.840	0.813	0.827	0.873	0.830	0.775
	XLNet	0.856	0.876	0.843	0.829	0.830	0.876	0.830	0.780
	Llama 3.1	0.892	0.913	0.895	0.882	0.880	0.900	0.878	0.850
BiLSTM-CNN	BERT	0.900	0.930	0.907	0.880	0.879	0.922	0.910	0.863
	XLNet	0.900	0.922	0.903	0.892	0.910	0.920	0.905	0.893
	Llama 3.1	0.908	0.945	0.922	0.905	0.907	0.930	0.901	0.890
MHA	BERT	0.913	0.930	0.922	0.910	0.915	0.936	0.920	0.910
	XLNet	0.928	0.930	0.934	0.920	0.917	0.950	0.920	0.911
	Llama 3.1	0.926	0.941	0.933	0.922	0.920	0.944	0.925	0.920
Self attention	BERT	0.919	0.940	0.920	0.902	0.909	0.934	0.910	0.911
	XLNet	0.917	0.951	0.925	0.906	0.915	0.947	0.918	0.915
	Llama 3.1	0.920	0.953	0.930	0.920	0.909	0.942	0.912	0.905
Attention-RNN	BERT	0.920	0.943	0.930	0.922	0.915	0.940	0.923	0.910
	XLNet	0.923	0.950	0.933	0.920	0.922	0.954	0.931	0.911
	Llama 3.1	0.925	0.961	0.934	0.929	0.927	0.962	0.930	0.913
Self attention LSTM	BERT	0.922	0.944	0.913	0.910	0.908	0.960	0.920	0.900
	XLNet	0.922	0.950	0.916	0.910	0.912	0.952	0.920	0.896
	Llama 3.1	0.937	0.964	0.920	0.918	0.912	0.960	0.932	0.904
RNN-self attention	BERT	0.920	0.941	0.906	0.913	0.905	0.945	0.910	0.903
	XLNet	0.920	0.947	0.914	0.907	0.910	0.948	0.915	0.892
	Llama 3.1	0.934	0.961	0.915	0.914	0.910	0.957	0.930	0.901
Attention-BiLSTM	BERT	0.925	0.953	0.920	0.918	0.922	0.960	0.925	0.912
	XLNet	0.930	0.958	0.925	0.927	0.920	0.964	0.930	0.904
	Llama 3.1	0.937	0.960	0.925	0.923	0.920	0.965	0.930	0.915
Self attention BiLSTM	BERT	0.922	0.950	0.916	0.913	0.920	0.955	0.922	0.910
	XLNet	0.926	0.954	0.922	0.924	0.916	0.960	0.927	0.902
	Llama 3.1	0.935	0.963	0.924	0.928	0.924	0.963	0.935	0.910
Attention-BiGRU	BERT	0.926	0.950	0.918	0.912	0.915	0.957	0.922	0.903
	XLNet	0.924	0.952	0.922	0.921	0.914	0.962	0.922	0.900
	Llama 3.1	0.935	0.963	0.924	0.928	0.924	0.963	0.935	0.910
MHA-BiLSTM	BERT	0.933	0.960	0.930	0.926	0.933	0.969	0.931	0.919
	XLNet	0.936	0.965	0.932	0.930	0.922	0.972	0.940	0.912
	Llama 3.1	0.940	0.968	0.935	0.933	0.928	0.974	0.938	0.925
MHA-BiGRU	BERT	0.931	0.958	0.927	0.922	0.930	0.965	0.930	0.917
	XLNet	0.935	0.963	0.931	0.933	0.925	0.974	0.936	0.910
	Llama 3.1	0.941	0.963	0.932	0.930	0.924	0.972	0.935	0.921
Attention-MHA	BERT	0.928	0.955	0.923	0.920	0.925	0.963	0.927	0.915
	XLNet	0.932	0.960	0.928	0.930	0.923	0.972	0.933	0.908
	Llama 3.1	0.940	0.961	0.928	0.927	0.922	0.970	0.933	0.920
Hierarchical-LENG	BERT	0.942	0.970	0.940	0.935	0.930	0.972	0.933	0.925
	XLNet	0.934	0.975	0.948	0.938	0.933	0.975	0.940	0.932
	Llama 3.1	0.951	0.985	0.955	0.947	0.943	0.982	0.950	0.935

Table 2. Statistical analysis based on sample size.

Split Size	Reddit	CEASE-v2.0
25 %, 30%	0.010	0.015
25 %, 40%	0.018	0.025
25 %, 50%	0.013	0.028
30 %, 40%	0.022	0.030
30 %, 50%	0.025	0.035
40 %, 50%	0.042	0.048