GMAN: A Graph Multi-Attention Network for Traffic Prediction

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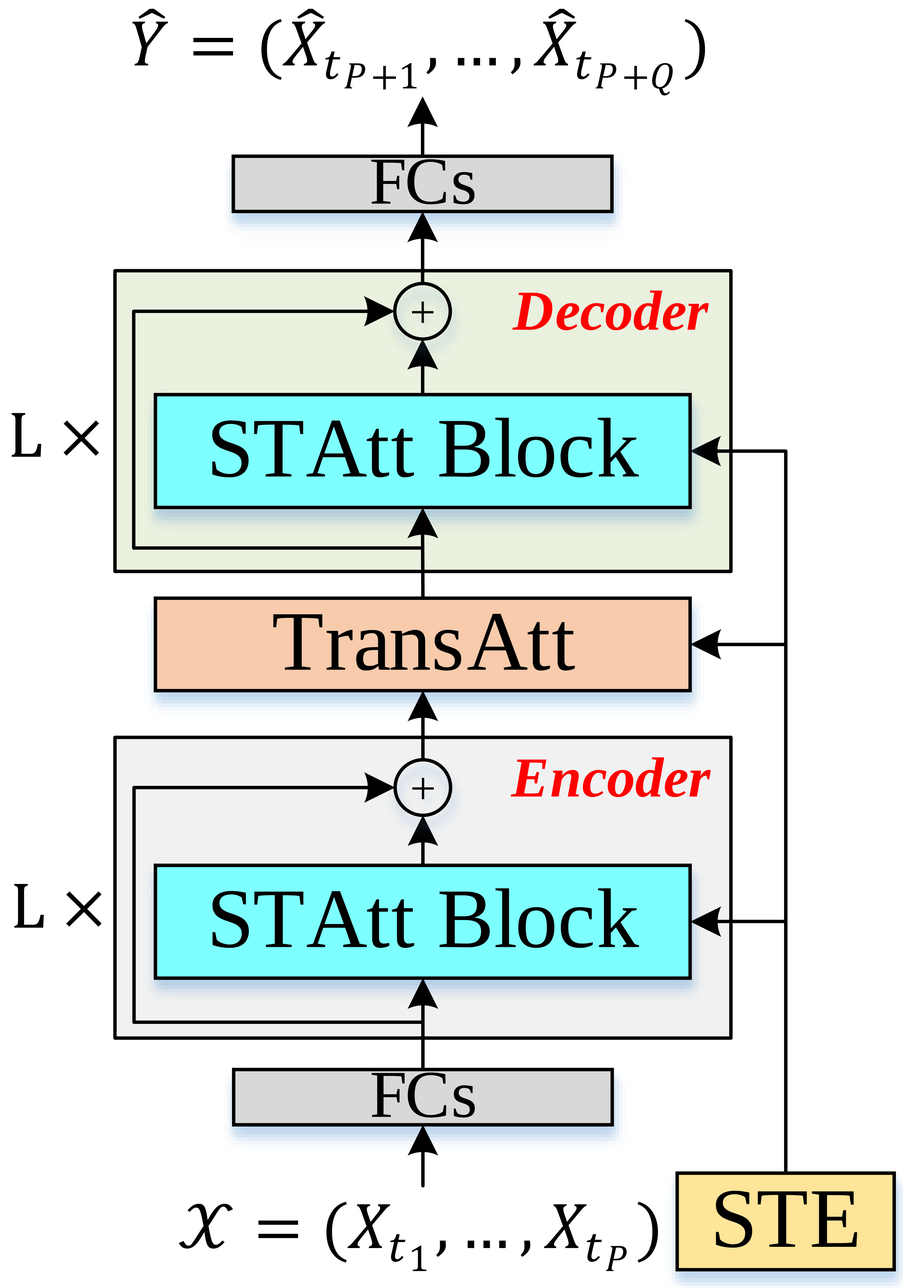
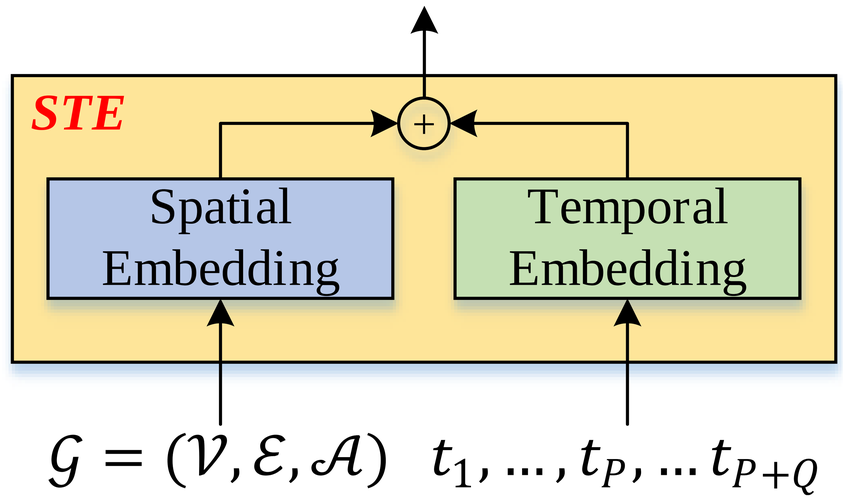
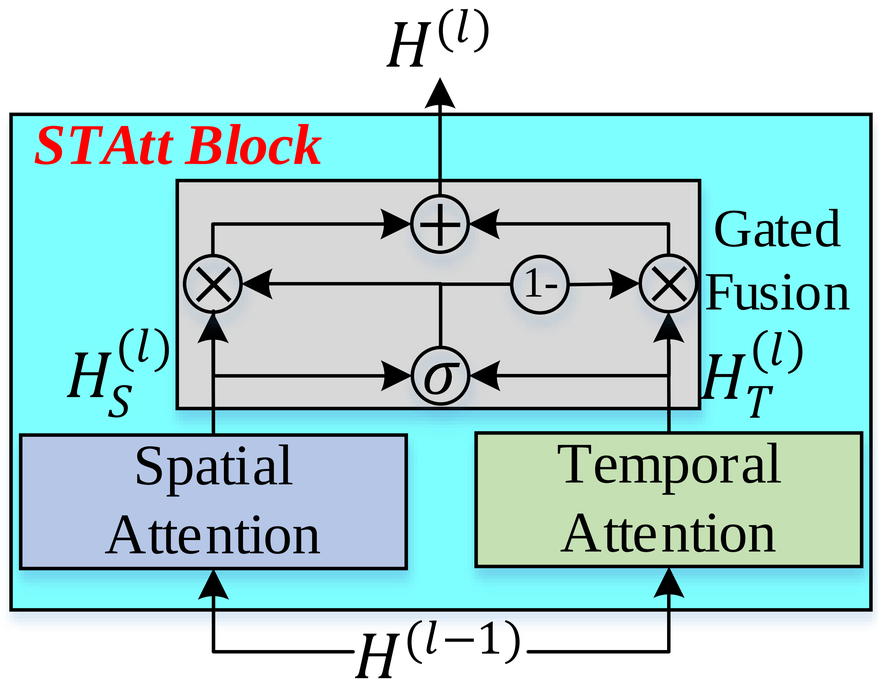


(a) The architecture of GMAN



(b) Spatio-Temporal Embedding



(c) ST-Attention Block

Source code: https://github.com/zhengchuanpan/GMAN

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Data	Method	15 min			30 min			1 hour		
		MAE	RMSE	MAPE	MAE	RMSE	MAPE	MAE	RMSE	MAPE
Xiamen	ARIMA	14.81	25.03	18.05%	18.83	33.09	22.19%	26.58	46.32	30.76%
	SVR	13.05	21.47	16.46%	15.66	26.34	19.68%	20.69	35.68	26.24%
	FNN	13.55	22.47	16.72%	16.80	28.71	19.97%	22.90	39.51	26.19%
	FC-LSTM	12.51	20.79	16.08%	13.74	23.93	17.23%	16.02	29.57	19.33%
	STGCN	11.76	19.94	14.93%	13.19	23.29	16.36%	15.83	29.40	18.66%
	DCRNN	11.67	**19.40**	14.85%	12.76	22.20	15.99%	14.30	25.86	17.17%
	Graph WaveNet	**11.26**	19.57	**14.39%**	12.06	21.61	15.39%	13.33	24.77	16.50%
	GMAN	11.50	19.52	14.59%	**12.02**	**21.42**	**15.14%**	**12.79**	**24.15**	**15.84%**
PeMS	ARIMA	1.62	3.30	3.50%	2.33	4.76	5.40%	3.38	6.50	8.30%
	SVR	1.85	3.59	3.80%	2.48	5.18	5.50%	3.28	7.08	8.00%
	FNN	2.20	4.42	5.19%	2.30	4.63	5.43%	2.46	4.98	5.89%
	FC-LSTM	2.05	4.19	4.80%	2.20	4.55	5.20%	2.37	4.96	5.70%
	STGCN	1.36	2.96	2.90%	1.81	4.27	4.17%	2.49	5.69	5.79%
	DCRNN	1.38	2.95	2.90%	1.74	3.97	3.90%	2.07	4.74	4.90%
	Graph WaveNet	**1.30**	**2.74**	**2.73%**	1.63	**3.70**	3.67%	1.95	4.52	4.63%
	GMAN	1.34	2.82	2.81%	**1.62**	3.72	**3.63**%	**1.86**	**4.32**	**4.31**%

The advantages of GMAN are more evident in the long-term prediction