

Predictive power of SBTS

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This short note is prepared for the NeurIPS review process. In this context, we explore the illustrative example of an AR multivariate model, similar to the presentation in section 5.1 of Yoon et al [1]. Within the SBTS model, we carry out simulations for the conditional mean and subsequently compute the predictive score by measuring the mean absolute error between this calculated conditional mean and the actual value provided by the AR model. This obtained score is then compared against the predictive score generated by the TimeGAN method. The results of this comparative analysis are reported in Table 1. We note that the computed predictive scores are based on a testing dataset

Settings	Temporal correlation (fixing $\sigma = 0.8$)			Feature correlation (fixing $\phi = 0.8$)		
	$\phi = 0.2$	$\phi = 0.5$	$\phi = 0.8$	$\sigma = 0.2$	$\sigma = 0.5$	$\sigma = 0.8$
Predictive score						
SBTS	.161 \pm .016	.180 \pm .026	.244 \pm .014	.325 \pm .052	.295 \pm .038	.244 \pm .014
TimeGAN	.640 \pm 0.003	0.412 \pm 0.002	.251 \pm .002	.282 \pm .005	.261 \pm .002	.251 \pm .002

Table 1: Predictive scores for SBTS and TimeGAN

References

- [1] Jinsung Yoon, Daniel Jarrett, and Mihaela van der Schaar. Time-series generative adversarial networks. In H. Wallach, H. Larochelle, A. Beygelzimer, F. d'Alché-Buc, E. Fox, and R. Garnett, editors, *Advances in Neural Information Processing Systems*, volume 32. Curran Associates, Inc., 2019.