

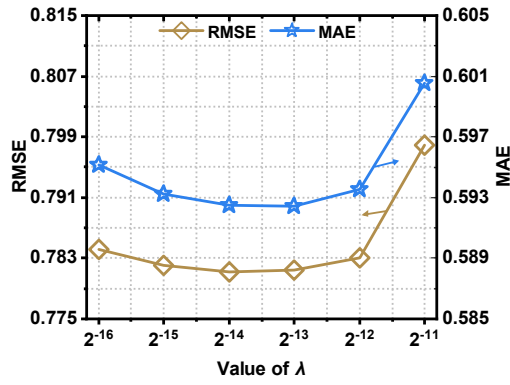
A Fast Nonnegative Autoencoder-Based Approach to Latent Feature Analysis on High-Dimensional and Incomplete Data

Supplementary File

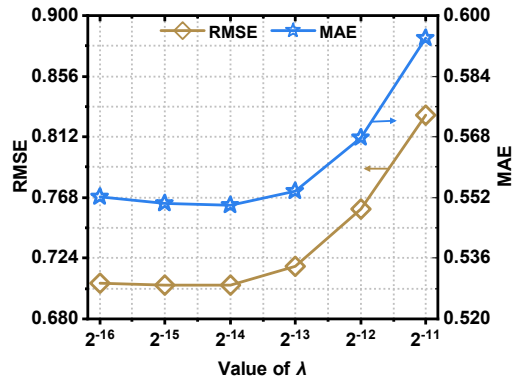
Fanghui Bi, Tiantian He, *Member, IEEE*, and Xin Luo, *Senior Member, IEEE*

This is the supplementary file for the paper entitled “A Fast Nonnegative Autoencoder-Based Approach to Latent Feature Analysis on High-Dimensional and Incomplete Data”. Additional figures are put into this file and cited in Section 4.3 of the paper.

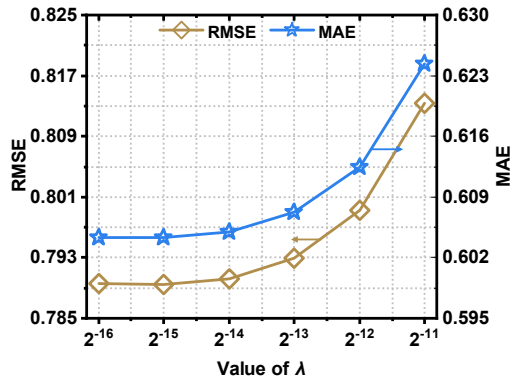
- Figs. **S1-S2** plot the lowest errors and training epochs of FNAE as λ varies;
- Figs. **S3-S4** plot the lowest errors and training epochs of FNAE as η varies;
- Figs. **S5-S6** plot the lowest errors and training epochs of FNAE as D varies.



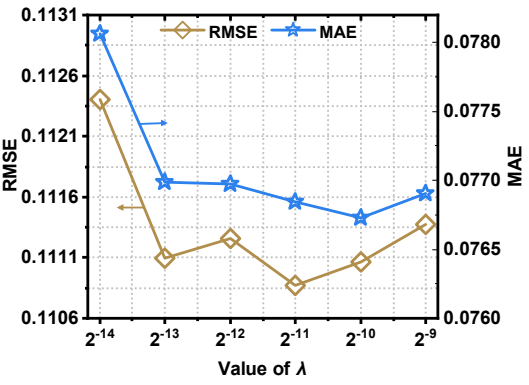
(a) Errors on D1



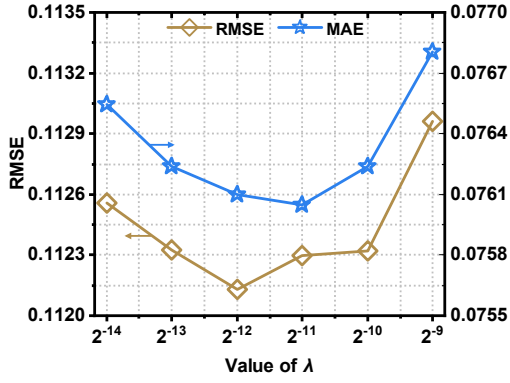
(b) Errors on D2



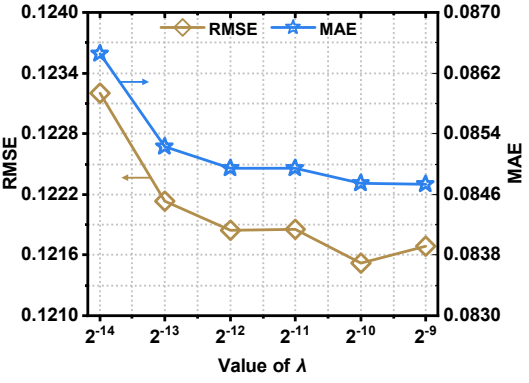
(c) Errors on D3



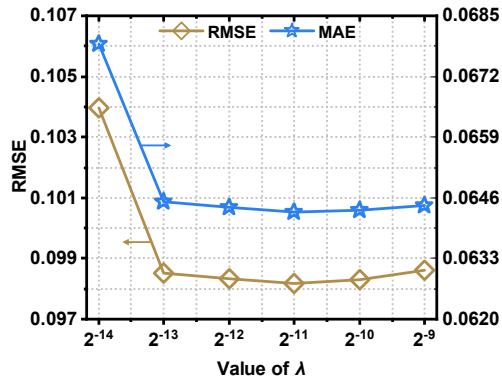
(d) Errors on D4



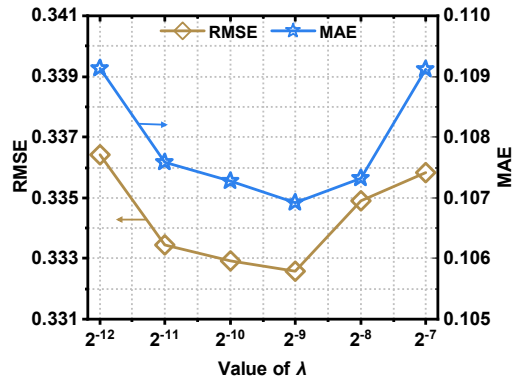
(e) Errors on D5



(f) Errors on D6

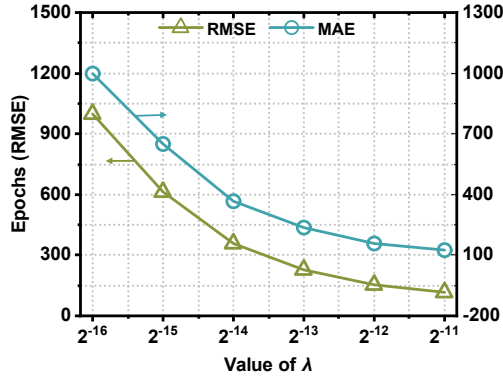


(g) Errors on D7

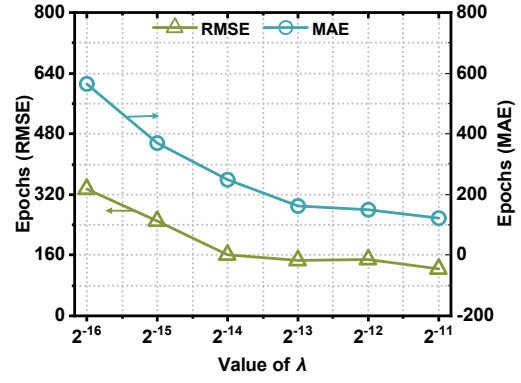


(h) Errors on D8

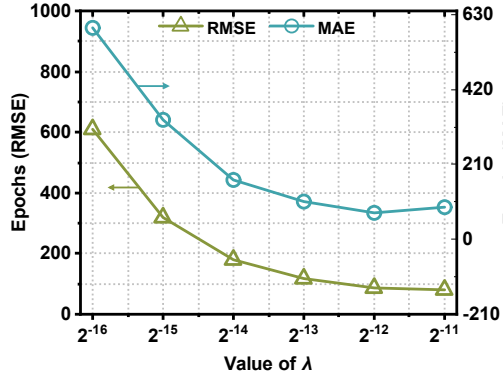
Fig. S1. Errors of FNAE as λ varies while other hyperparameters are being fixed on D1-8.



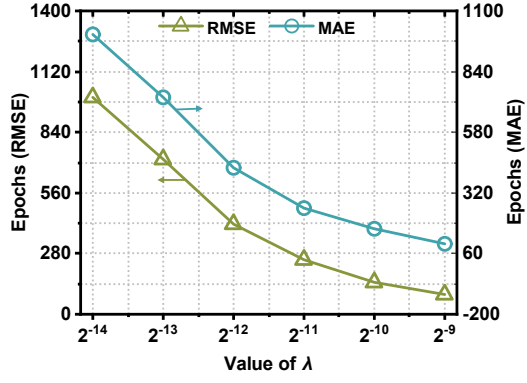
(a) Epochs on D1



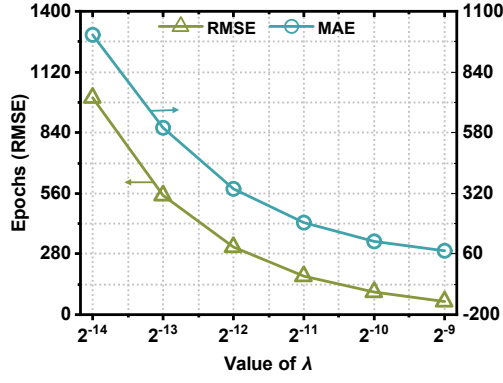
(b) Epochs on D2



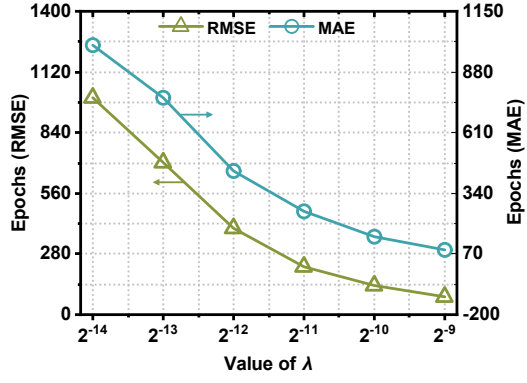
(c) Epochs on D3



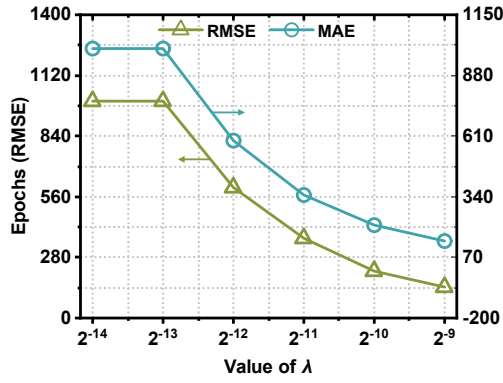
(d) Epochs on D4



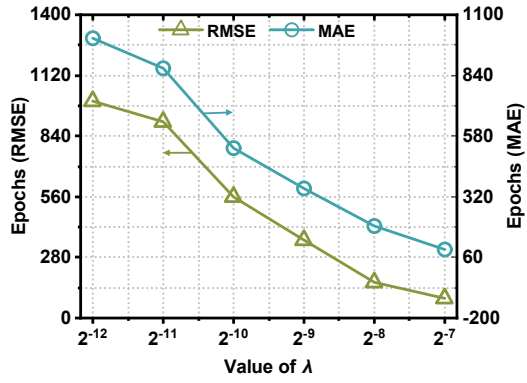
(e) Epochs on D5



(f) Epochs on D6

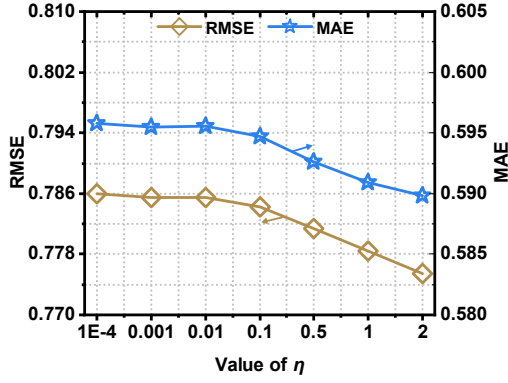


(g) Epochs on D7

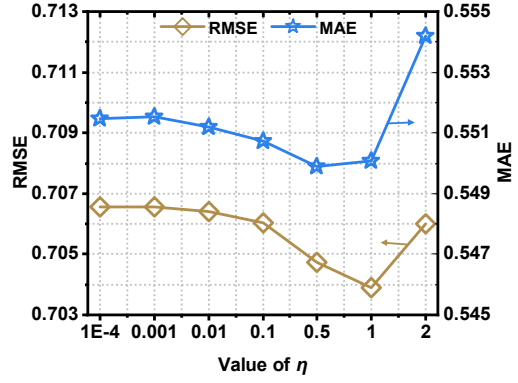


(h) Epochs on D8

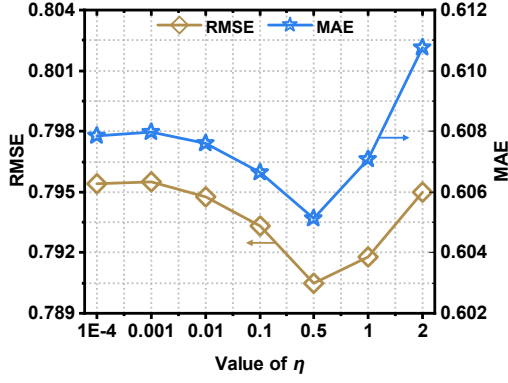
Fig. S2. Epochs of FNAE as λ varies while other hyperparameters are being fixed on D1-8.



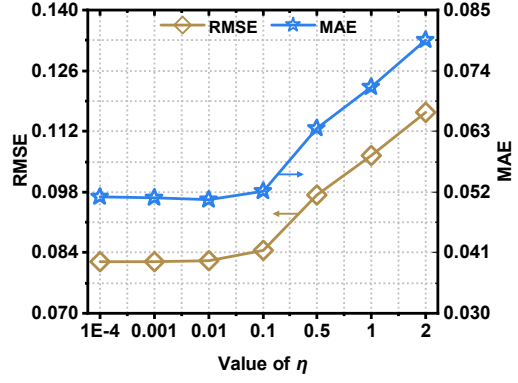
(a) Errors on D1



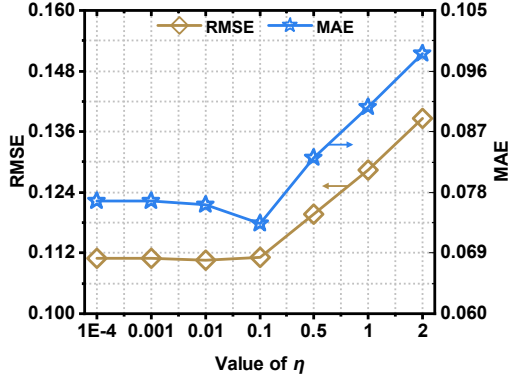
(b) Errors on D2



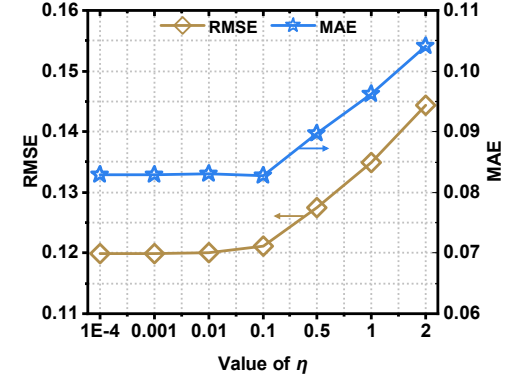
(c) Errors on D3



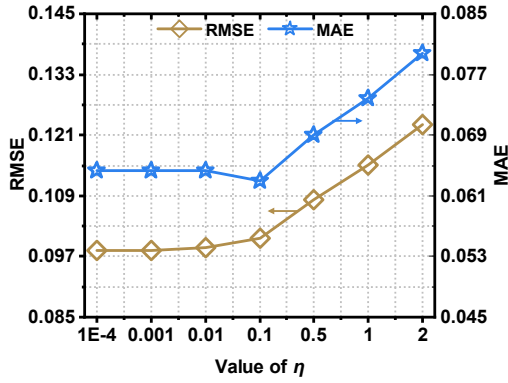
(d) Errors on D4



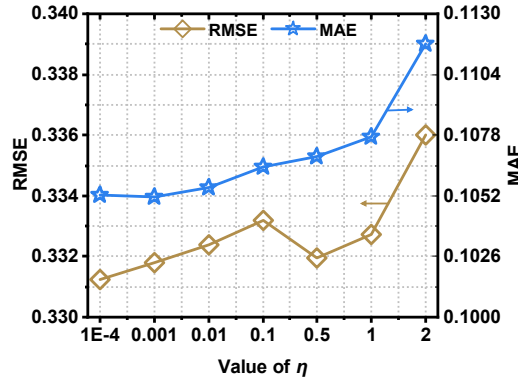
(e) Errors on D5



(f) Errors on D6

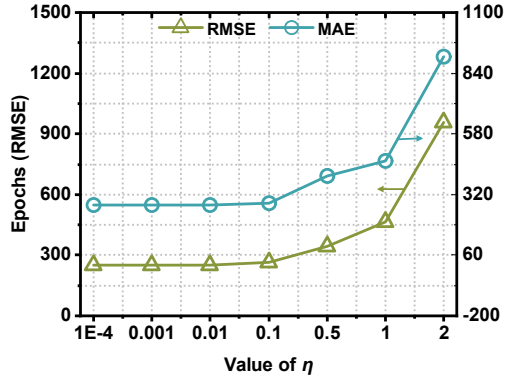


(g) Errors on D7

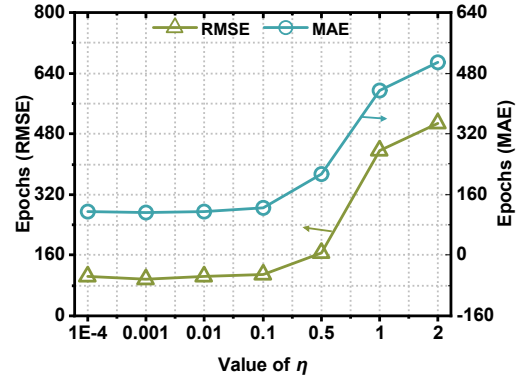


(h) Errors on D8

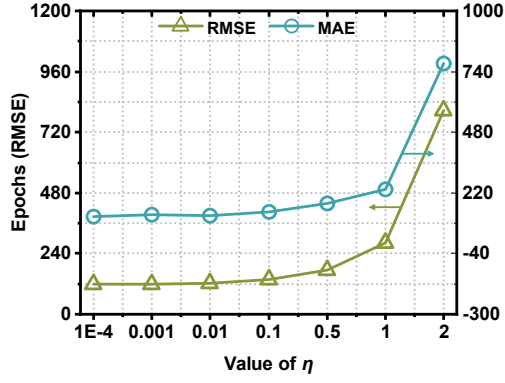
Fig. S3. Errors of FNAE as η varies while other hyperparameters are being fixed on D1-8.



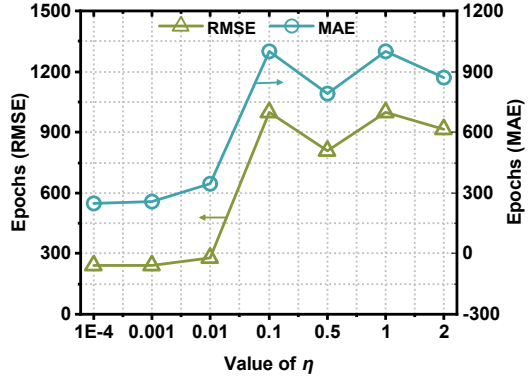
(a) Epochs on D1



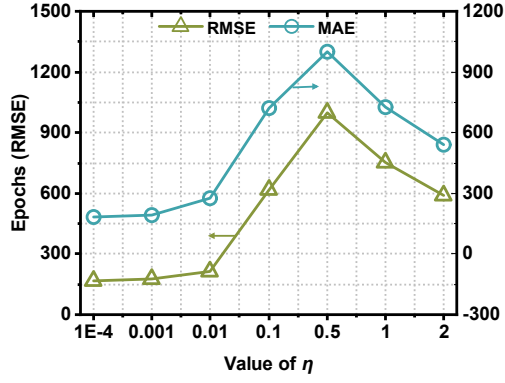
(b) Epochs on D2



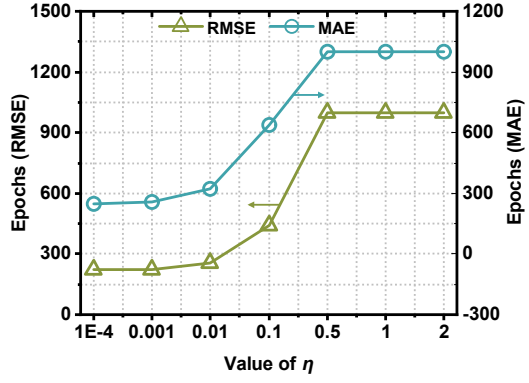
(c) Epochs on D3



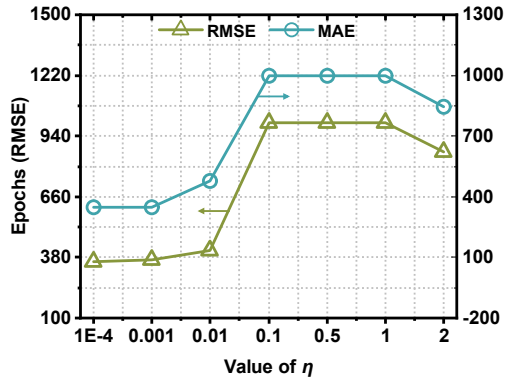
(d) Epochs on D4



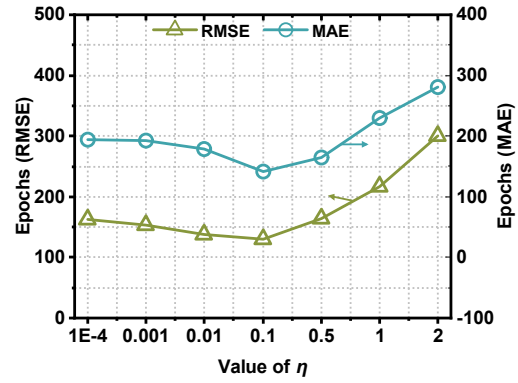
(e) Epochs on D5



(f) Epochs on D6

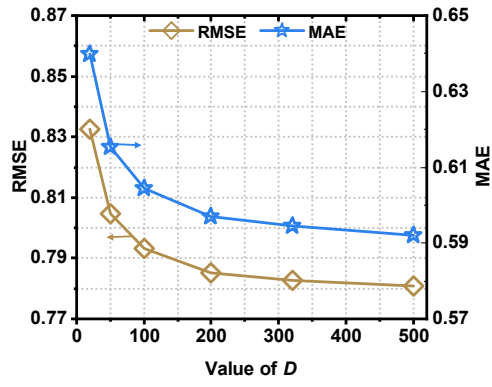


(g) Epochs on D7

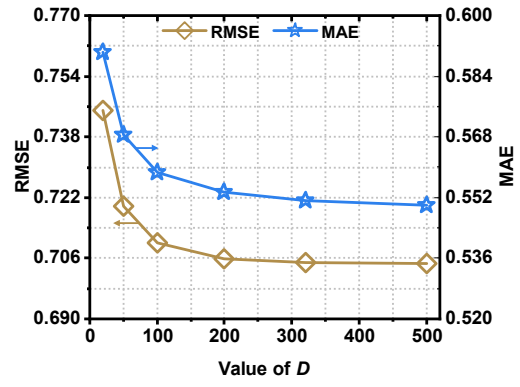


(h) Epochs on D8

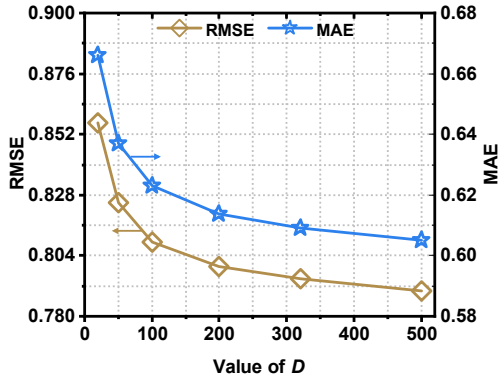
Fig. S4. Epochs of FNAE as η varies while other hyperparameters are being fixed on D1-8.



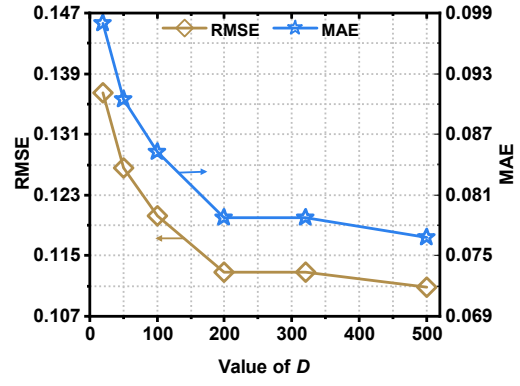
(a) Errors on D1



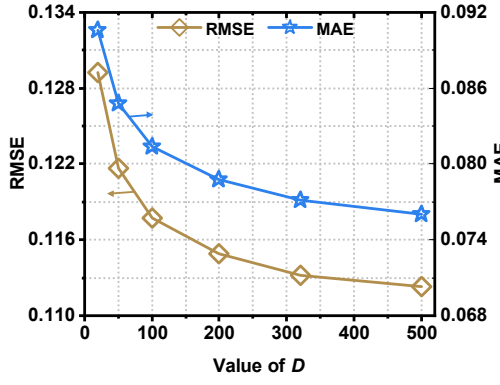
(b) Errors on D2



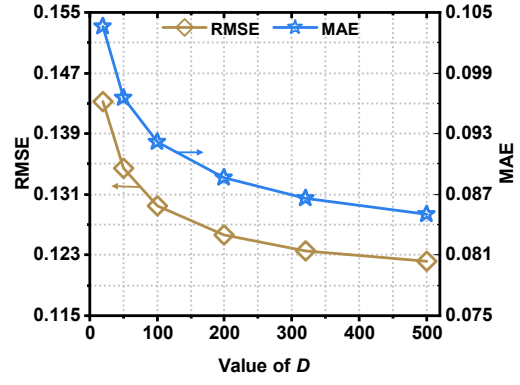
(c) Errors on D3



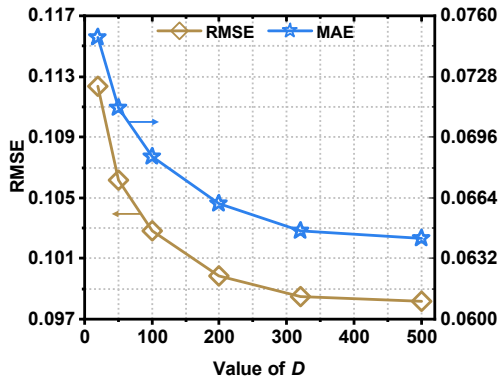
(d) Errors on D4



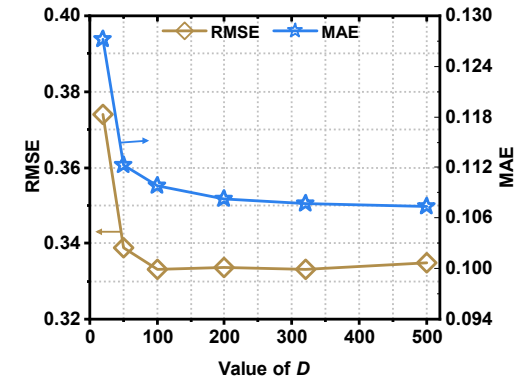
(e) Errors on D5



(f) Errors on D6

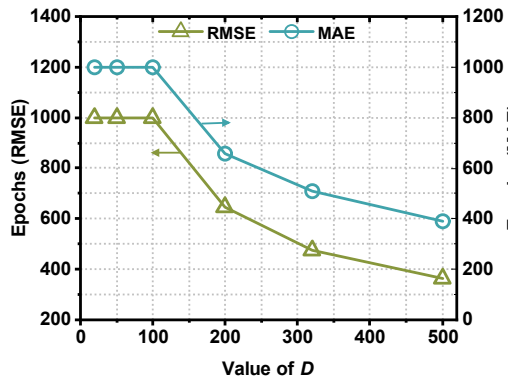


(g) Errors on D7

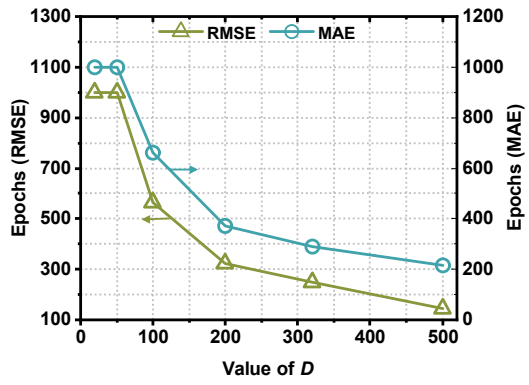


(h) Errors on D8

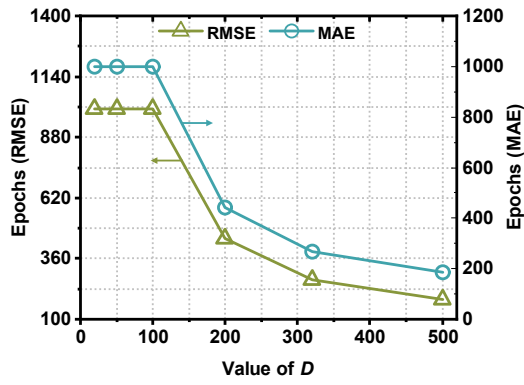
Fig. S5. Errors of FNAE as D varies while other hyperparameters are being fixed on D1-8.



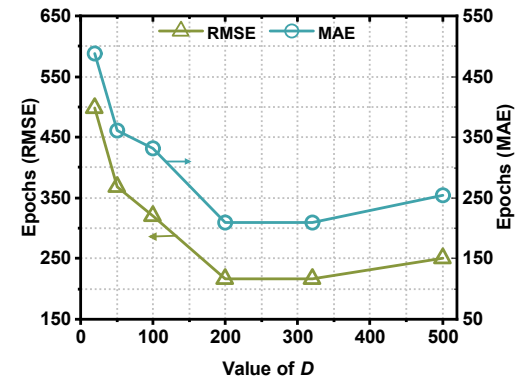
(a) Epochs on D1



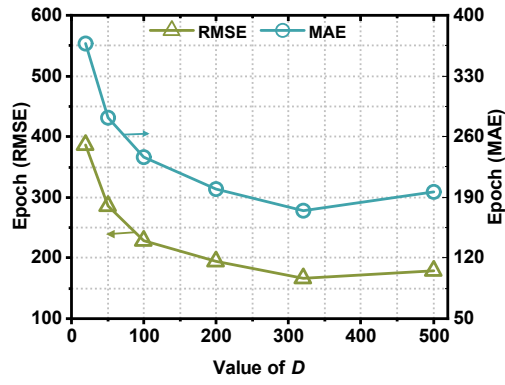
(b) Epochs on D2



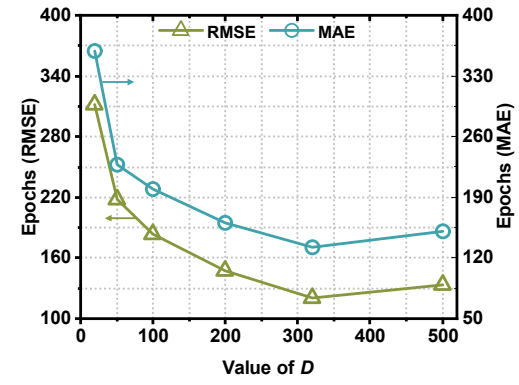
(c) Epochs on D3



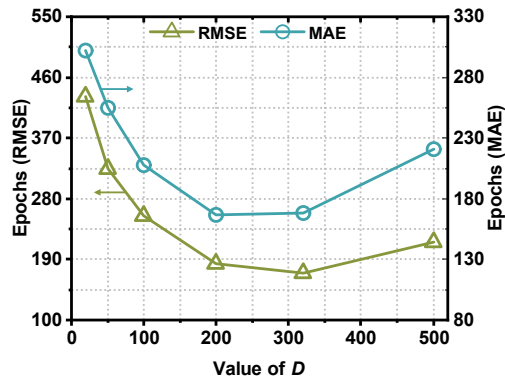
(d) Epochs on D4



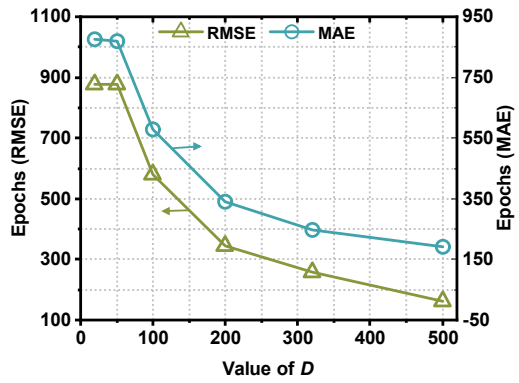
(e) Epochs on D5



(f) Epochs on D6



(g) Epochs on D7



(h) Epochs on D8

Fig. S6. Epochs of FNAE as D varies while other hyperparameters are being fixed on D1-8.