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Research article

Valuation of crypto assets on blockchain with deep learning approach

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Supplementary

Appendix

Supervised deep learning models using optimization methods such as gradient descent transitions from under-fitting to over-fitting as the training process persists. The validation set provides an unbiased evaluation of a model fit on the training set while tuning the model (Brownlee, 2020) The validation set's loss curve may fluctuate during training, and may produce multiple local minima (Prechelt, 2012)

Figures 5 plotted the loss curves of the training and validation sets of ETH. We can see that for ETH, the loss curves of the training set gradually decline as the training epoch grows; and the loss curves of the validation set decline at first and then rise after several epochs. Thus, we select the CAVMs near the epochs where the validation set loss curves start to rise as our candidate models. By considering the trade-off between loss curves of training set and validation set, and comparing the outputs of the candidate models, we finally selected the CAVM at the 71th epoch for ETH.

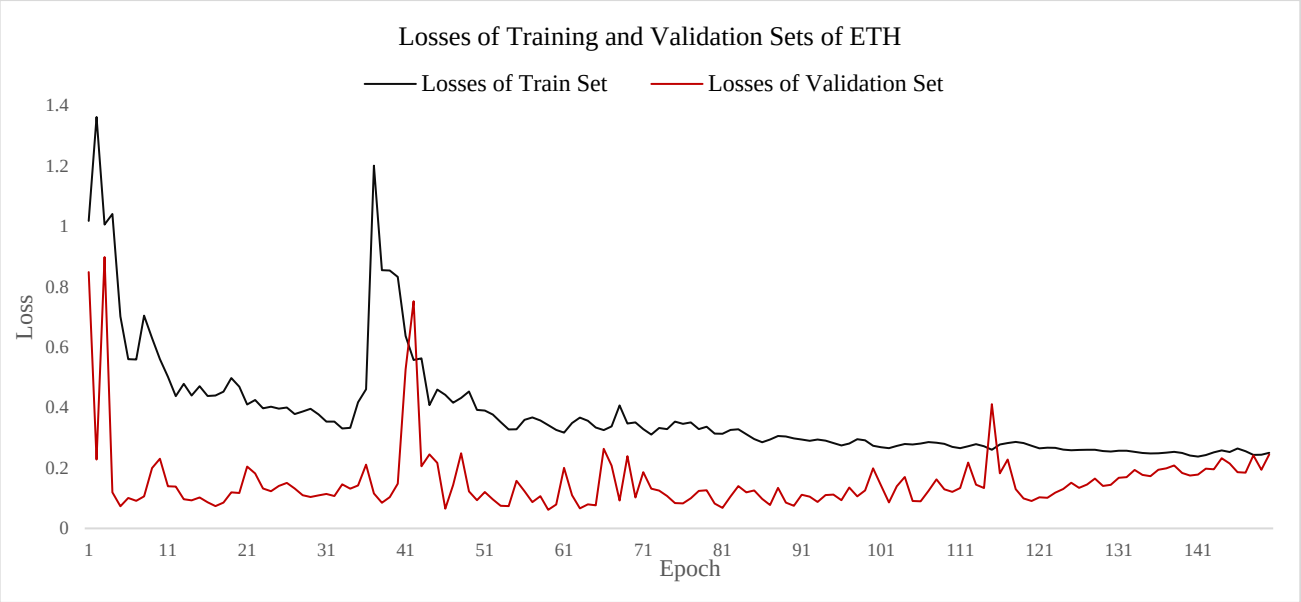

Figure 5. The loss curves of the training set and validation set of ETH.

The CAVM for ETH is trained with training set samples between 22 April 2021 to 17 August 2024, and the fitted models are evaluated with validation set samples between 18 August 2024 and 16 October 2024. The samples are the 30-day data observations and are generated by rolling window method. According to the loss curves in the figure, the trained CAVM at the 71th epoch is selected for ETH.