CS598 DL4H Spring 2023 Reproducibility Project - StageNet

Husam Battat and Rui Mao
{hbattat2, ruim6}@illinois.edu
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Presentation link: https://www.youtube.com
Code link: https://github.com/hbattat/cs598-dlh-project

Motivation

- To verify the original research findings
- To learn from the model architecture and techniques

StageNet Reproducibility - Problem we are addressing

One	Two	Three
To replicate the StageNet result for the MIMIC-III decompensation risk prediction task	To conduct an ablation test in order to confirm the efficacy of the convolutional modules	To investigate the impact of model parameters on overall performance

Platform

Google Colap Premium:

CPU: Intel(R) Xeon(R) CPU @ 2.30GHz

GPU: 40 G DDR5

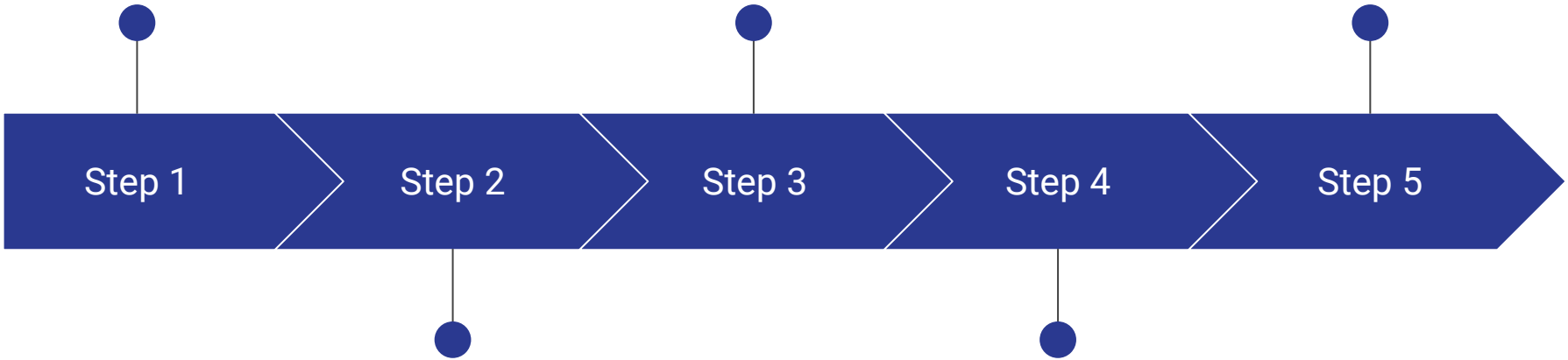
RAM: 80 G

Data Preprocessing

Generate subject directories

Generate episodes time series

Generate decompensation data



Data cleaning

Split training/testing data

Followed steps of MIMIC-III Benchmarks
https://github.com/YerevaNN/mimic3-benchmarks/

Result

Error between Reproduced and Original Paper:

AUPRC: 0.9%
AUROC:0.4%
min(Re,P+): 6%

Model	AUPRC	AUROC	Min(Re,P+)
Original	0.323	0.903	0.372
Pre-Trained Model	0.337	0.903	0.372
Reproduced	0.320	0.907	0.348
Parameter Tuning hidden_dim=72, Chunk_size=36	0.261	0.885	0.296
Ablation Model	0.193	0.873	0.274

References

Junyi Gao, Cao Xiao, Yasha Wang, Wen Tang, Lucas M. Glass, Jimeng Sun. 2020. StageNet: Stage-Aware Neural Networks for Health Risk Prediction. In Proceedings of The Web Conference 2020 (WWW '20), April 20–24, 2020, Taipei, Taiwan. ACM, New York, NY, USA, 11 pages. https://doi.org/10.1145/3366423.3380136

https://github.com/v1xerunt/StageNet

https://github.com/YerevaNN/mimic3-benchmarks/