Deep Learning Based Sepsis Intervention: The Modelling and Prediction of Severe Sepsis Onset

Time-Series ICU Medical Records

Boosted Cascading Sub-Networks

- Recurrent Sub-Model
- Recurrent Sub-Model
- Recurrent Sub-Model
- Recurrent Sub-Model

Positive Predictions
Filtered Negative Predictions

Highly imbalanced dataset

Prediction of Sepsis Development

ICU Patient timeline
Optimal Prediction Point
Sepsis
ICU Disch.

Critical Diagnosis Point Penalty
Negative Reversal Penalty
Shifting Margin Hinge Loss

ICU Admit
ICU Disch.

PhysioNet CinC 2019 Challenge

Significantly Improved Prediction

Gavin Tsang, XiangHua Xie

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Combined Loss Function

Increasing Penalty

Optimal Prediction Point

Model Prediction

ICU Patient timeline

LSTM

ICU Admit
ICU Disch.