INM427 Neural Computing Individual Project

Yumi Heo (Msc Data Science / 230003122 / [yumi.heo@city.ac.uk](mailto:yumi.heo@city.ac.uk))

**A Comparison of Multilayer Perceptrons and Support Vector Machines for Bank Churn Prediction**

A paper (in pdf format, single column, font Arial 11, maximum 6 pages including all figures and

references) containing a description of the experiments and comparative evaluations (an example

paper has been provided on Moodle), plus any appendices (maximum 2 pages) containing any

supplementary materials, including a glossary of the main terms used in the paper and any relevant

intermediate results or implementation details not worth including in the main body of the paper. This

may include other graphs you have produced during the project, other model architectures and

parametrizations that you have considered, relevant implementation choices, issues or errors that

prompted you to make changes leading up to the main results. The paper must include at least two

figures which graphically illustrate quantitative aspects of your results, such as training/testing error

curves, learned parameters, algorithm outputs. The paper may be a comparison of two existing

algorithms, or it may propose a new algorithm in which case you still must compare it to one other

existing algorithm

165034 rows × 14 columns with the target

Comparison plots: lr curve & accuracy / prevision & recall curve(https://ai-com.tistory.com/entry/ML-%EB%B6%84%EB%A5%98-%EC%84%B1%EB%8A%A5-%EC%A7%80%ED%91%9C-Precision%EC%A0%95%EB%B0%80%EB%8F%84-Recall%EC%9E%AC%ED%98%84%EC%9C%A8)

Precision(정밀도)는 얼마나 정확하게 유저 이탈이라고 예측하는지에 대한 지표입니다. Recall(재현율)은 실제 이탈자에 대해서 얼마나 정확하게 이탈자라고 예측하는지에 대한 지표입니다.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mlp baseline(1 hidden layer / 6 hidden units) | Test Accuracy: 0. 84.38 | Precision of the best-trained model = 74.32  % | Recall of best-trained model = 48.67  % | F1 score of best-trained model = 58.82  % |
| MLP classifier(1 hidden layer / 6 hidden units) | Best Accuracy: 0.8625098466945403 |  |  |  |
| MLP classifier(2 hidden layer / 9:9 hidden units) | Best Accuracy: 0.8649336484275586  Best Hidden Units: (9, 9) |  |  |  |
| Mlp 2(2 hidden layer / 9:9 hidden units) | Test Accuracy: 0.8606 | Precision of the best-trained model = 73.40% | Recall of best-trained model = 61.06% | F1 score of best-trained model = 66.67% |
| Mlp 2(2 hidden layer / 9:9 hidden units), lr 스케줄러 적용  scheduler = lr\_scheduler.LinearLR(optimizer, start\_factor=0.33, total\_iters=4) | Test Accuracy: 0.8630 | Precision of the best-trained model = 76.74% | Recall of best-trained model = 58.41% | F1 score of best-trained model = 66.33% |
| Mlp 2(2 hidden layer / 9:9 hidden units), lr 스케줄러 적용  scheduler = lr\_scheduler.LinearLR(optimizer, start\_factor=0.33, total\_iters=100) | Test Accuracy: 0.8641 | Precision of the best-trained model = 77.65% | Recall of best-trained model = 58.41% | F1 score of best-trained model = 66.67% |
| Mlp 2(2 hidden layer / 9:9 hidden units), lr 스케줄러 적용  scheduler = lr\_scheduler.LinearLR(optimizer, start\_factor=0.33, total\_iters=100) | Test Accuracy: 0.8616 | Precision of the best-trained model = 75.61% | Recall of best-trained model = 54.87% | F1 score of best-trained model = 63.59% |

왜 LR 스케줄러에서 스텝은 안먹히고 리니어는 먹히지?

lr어떻게 변화하는지 print 뽑기

시그모이드가 왜 output layer에 쓰이는지, tanh에 대한 설명(Activation Functions: Comparison of Trends in Practice and Research for Deep Learning)

텍스트, 라인, 그래프, 스크린샷이(가) 표시된 사진

자동 생성된 설명

텍스트, 스크린샷, 소프트웨어, 멀티미디어 소프트웨어이(가) 표시된 사진

자동 생성된 설명

텍스트, 스크린샷, 라인, 그래프이(가) 표시된 사진

자동 생성된 설명