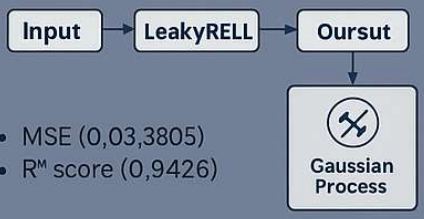
Genomic Prediction using Deep Neural Networks with Gaussian Process (DNNGP)

Objective

- Predicting agronomic traits from genomic data
- Combining DNN's power with the uncertainty estimation from Gaussian Processes
- Compare DNNGP to traditional models like SVR, Randon

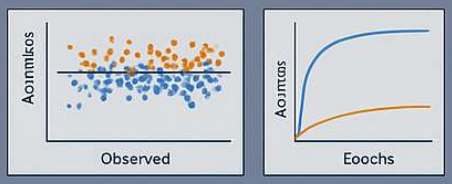
DNNGP Desont



- MSE (0,03,3805)
- R^{M} score (0,9426)

- DNNGP outperforms other models, showing bettenaccuracy and generalization

Results



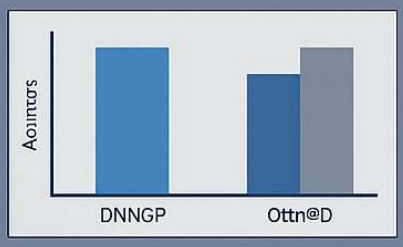
- DNNGP outperforms other models, showing better accuracy and generalization

DNNGP Model

- SVR
- Random Forest
- LightGBM

Comparison Models

- SVR
- Random Forest
- LightGBM



Conclusion & Future Work

- Integrate additional omics data
- Explore Bayesnia optinimization for hyperparameter tuning
- Expand application to other crops

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