

Profit Predictor of Companies using LSTM

**PATTERN RECOGNITION AND MACHINE
LEARNING - Master's in Automatic Control and
Robotics**



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Data Extraction and Management pipeline

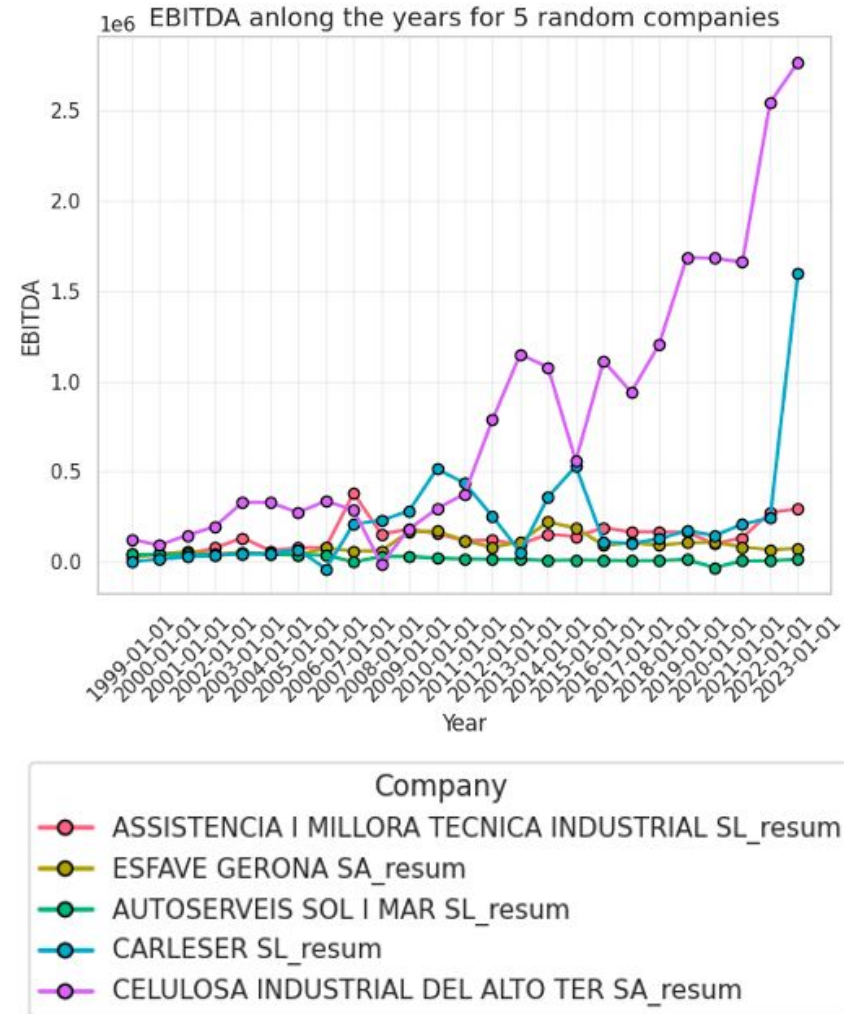
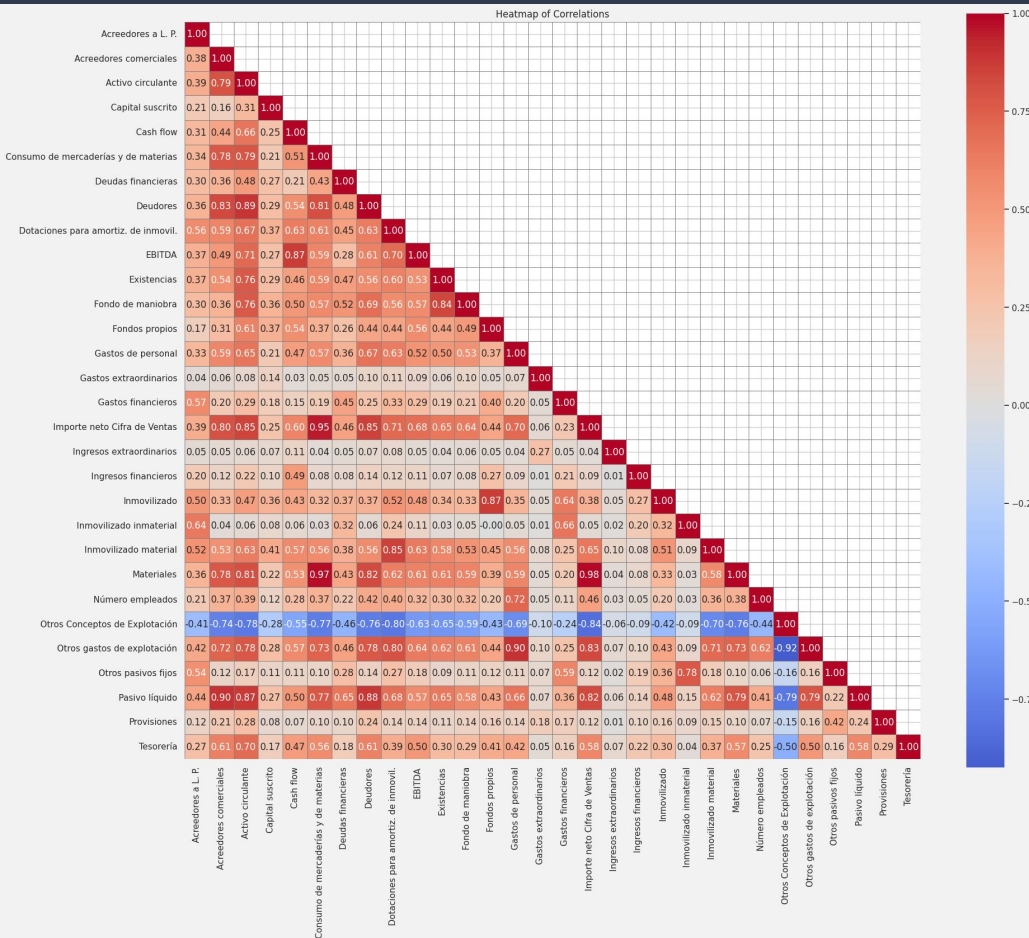
- > Source: SABI platform.

- > Data scraping using humanlike interaction techniques.

- > Scripts to convert .xls to csv clean and imputation were implemented.

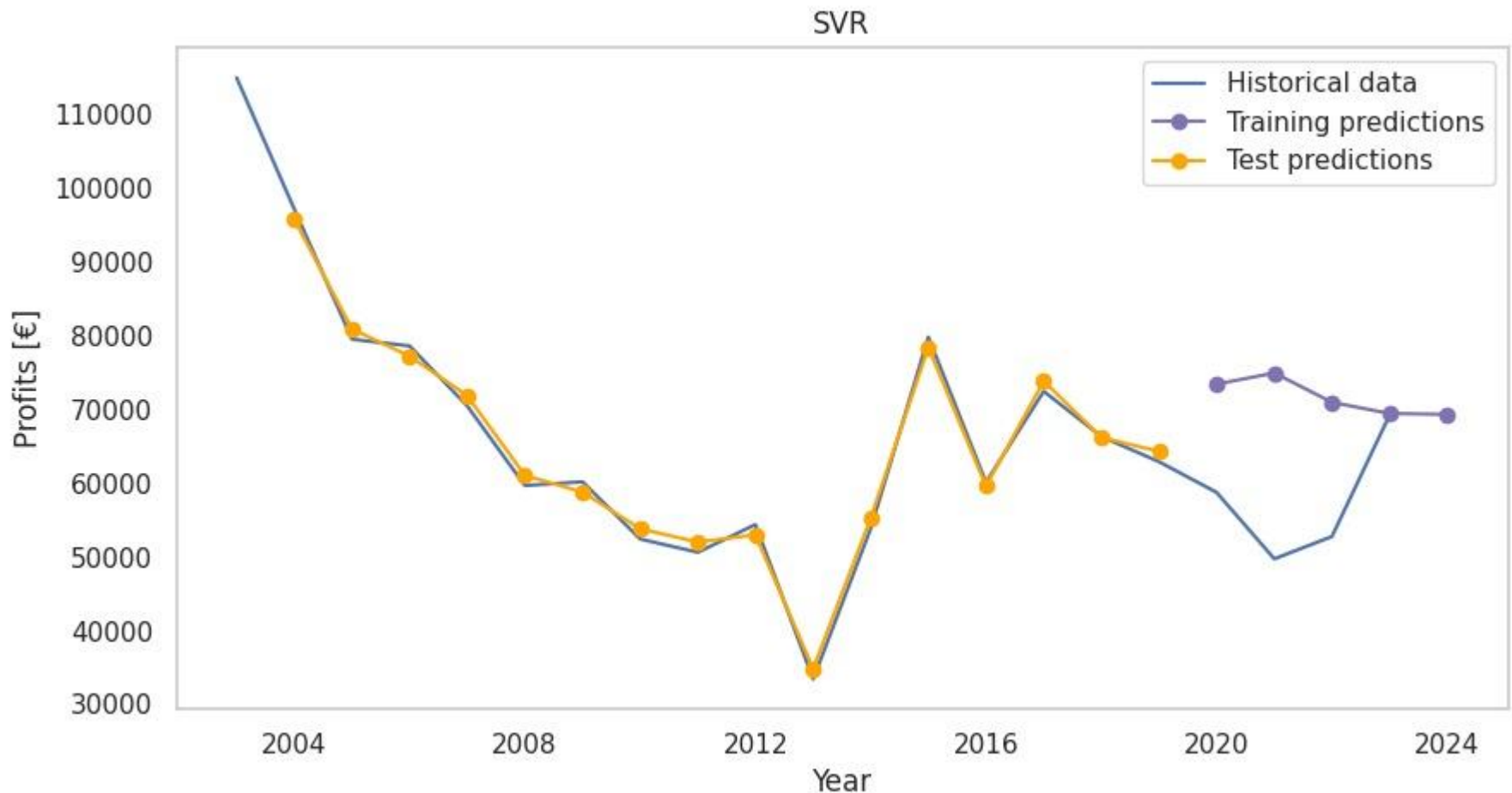
After scraping, filtering and cleaning, the resulting dataset comprises 2,159 unique companies with complete yearly financial data spanning from 2000 to 2023.

Data Analysis and Exploration



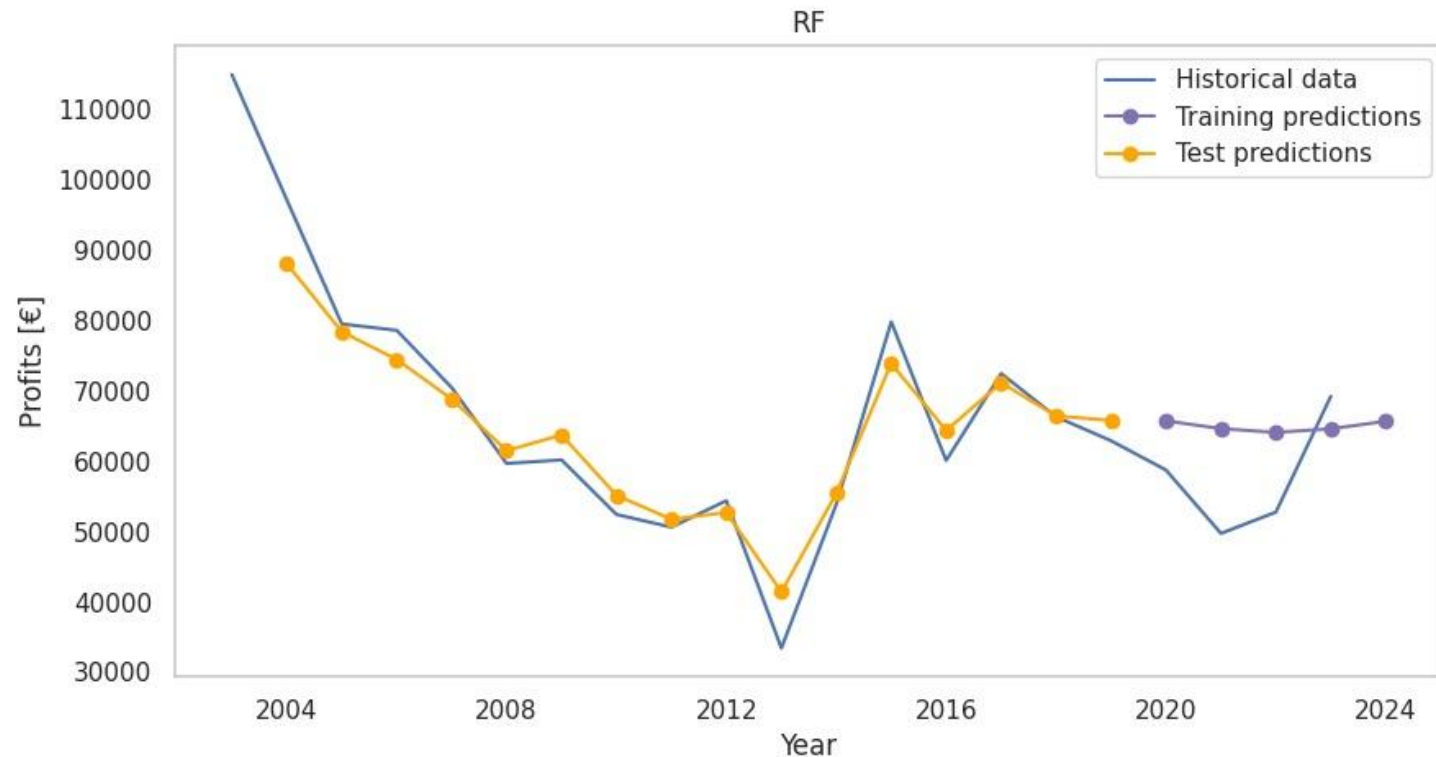
SVR Predictions

- SVR model predictions for a single company.



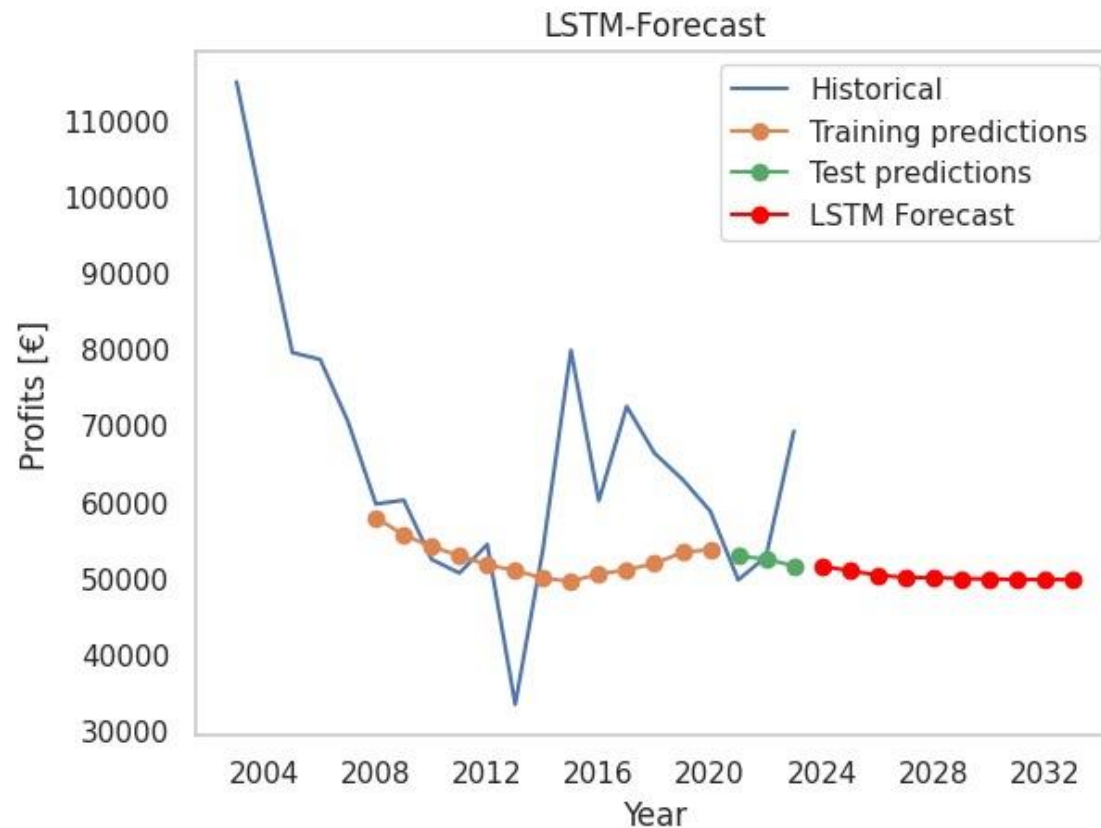
Random Forest Predictions

- Random Forest predictions for a single company.



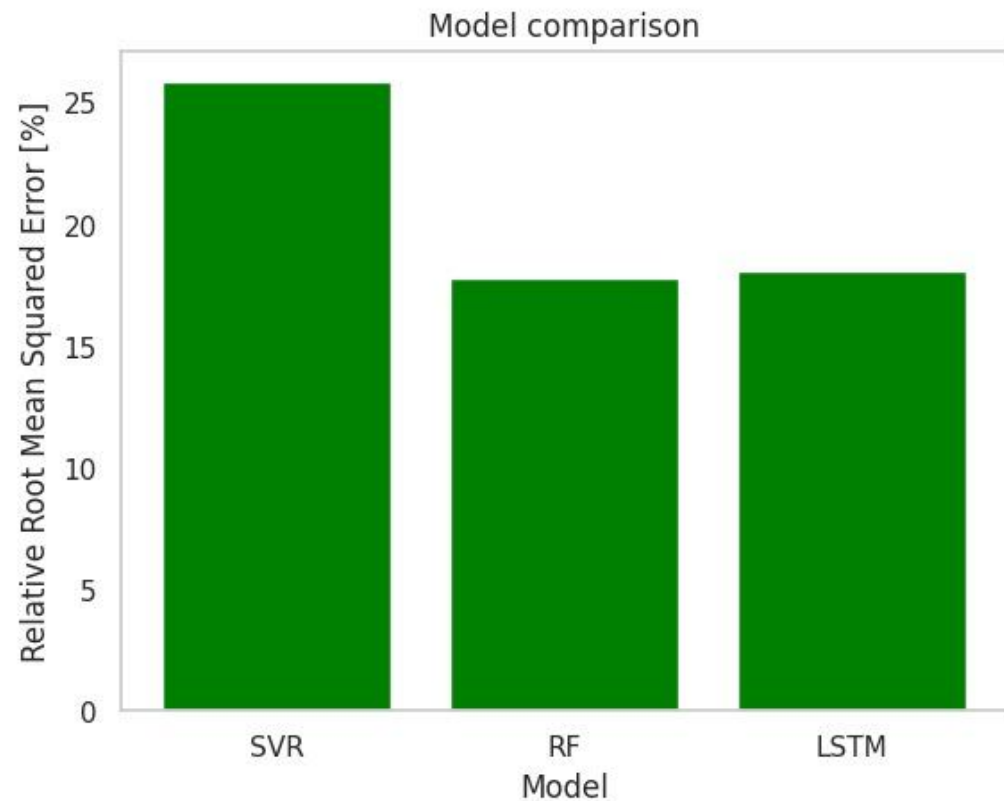
LSTM Prediction

- LSTM model predictions for a single company.



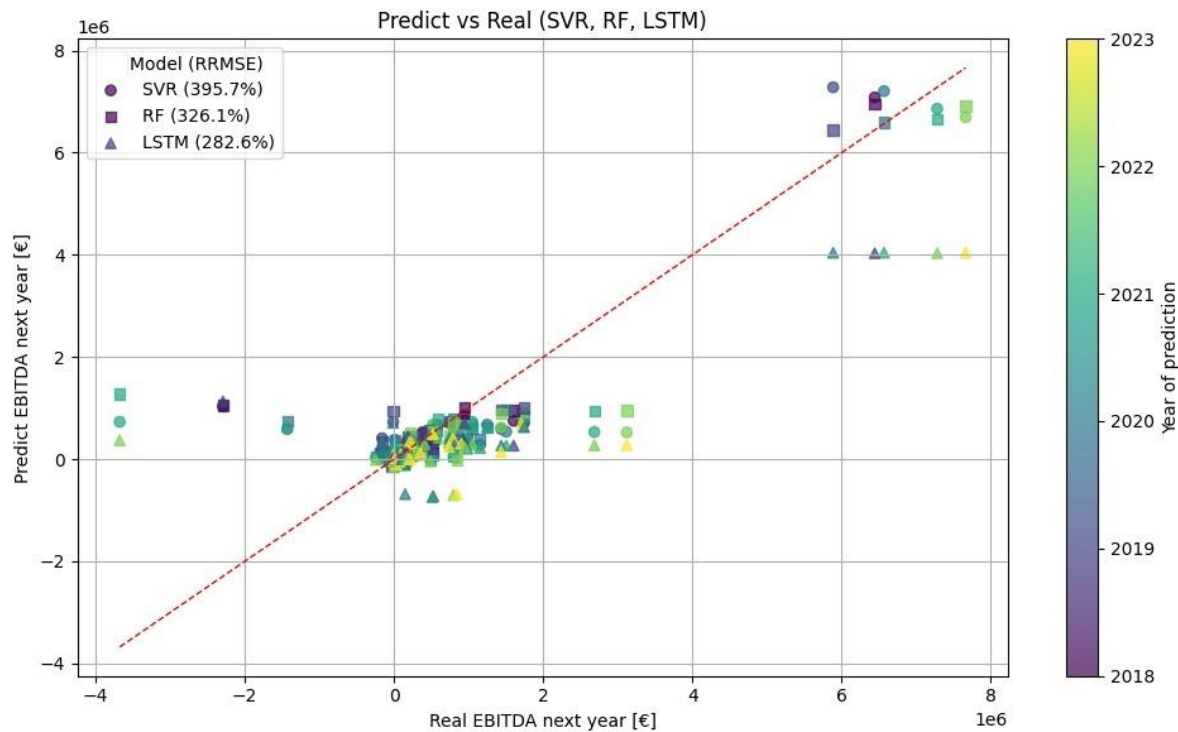
RRMSE Comparison

- Relative Root Mean Squared Error (RRMSE) for SVR, RF, and LSTM.



Global Comparison

- Predicted vs Real EBITDA values across all companies.



Conclusions

- LSTM outperforms SVR and RF in RMSE and visual trend matching.
- None of the models is ready for real-world use.
- Prediction errors remain large.
- Future work: better data and advanced models (e.g. transformers).