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Get loans with Home Credit

Kaggle competition
(https://www.kaggle.com/c/home-credit-default-risk)

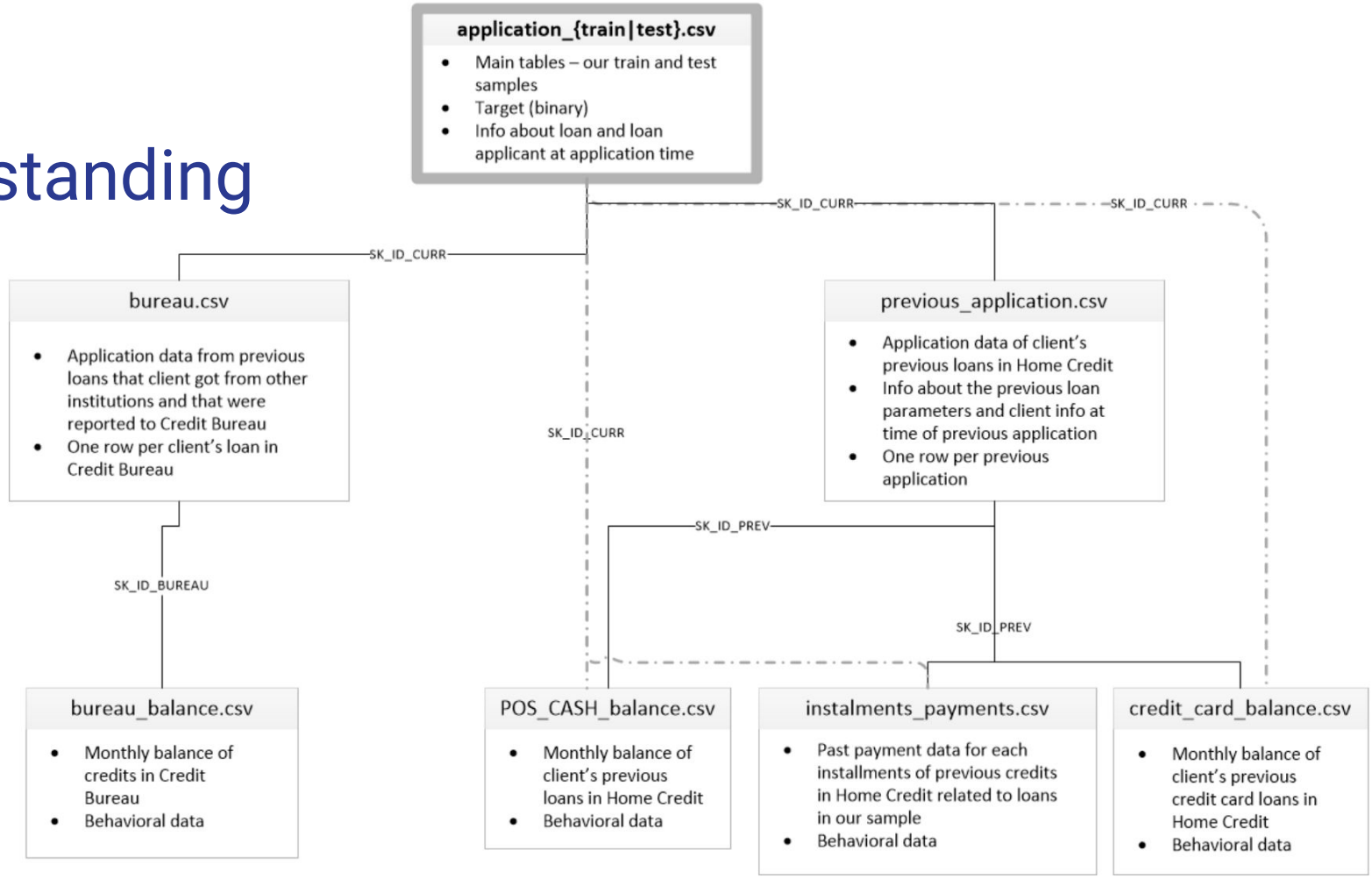
Workflow

Business Understanding

Target

Ensure that clients capable of repayment are not rejected and that loans are given.

Data Understanding



Data Preparation

- Everything to one table.
- Summary rows (GROUP BY) for related tables.
- Aggregate functions (COUNT, MAX, MIN, AVG).

Training data frame:

```
Rows:307511
Cols:613
```

Modeling

Gradient Boosting

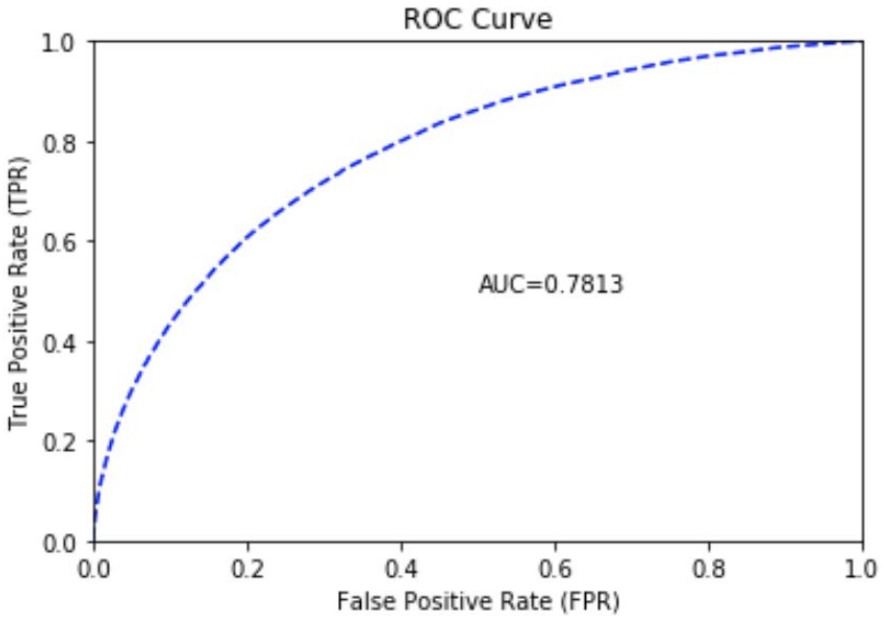
Gradient boosting is a machine learning technique, which produces a prediction model in the form of an ensemble of weak prediction models, typically decision trees. It builds the model in a stage-wise fashion like other boosting methods do, and it generalizes them by allowing optimization of an arbitrary differentiable loss function.

Auto ML

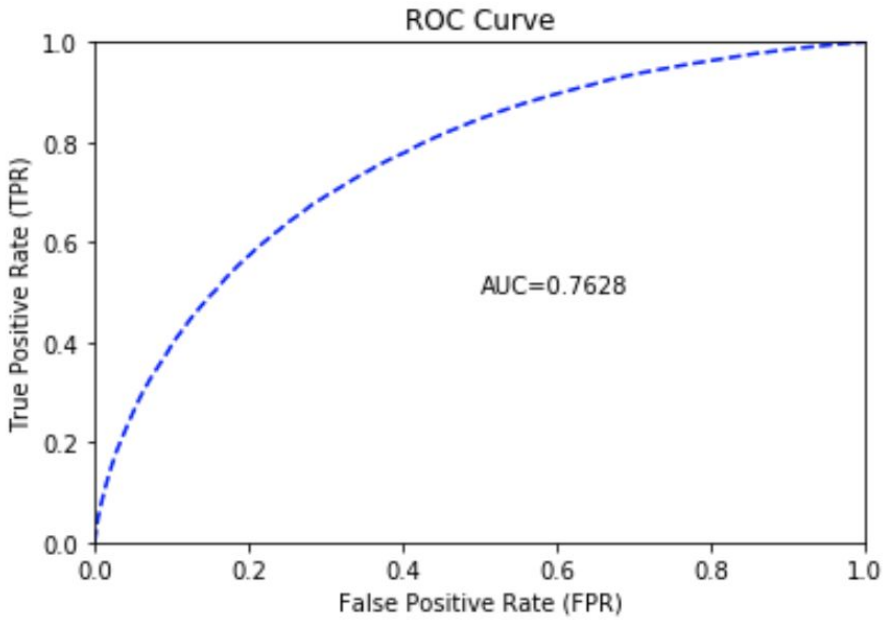
H2O's AutoML can be used for automating the machine learning workflow, which includes automatic training and tuning of many models.

Evaluation - Gradient Boosting - AUC

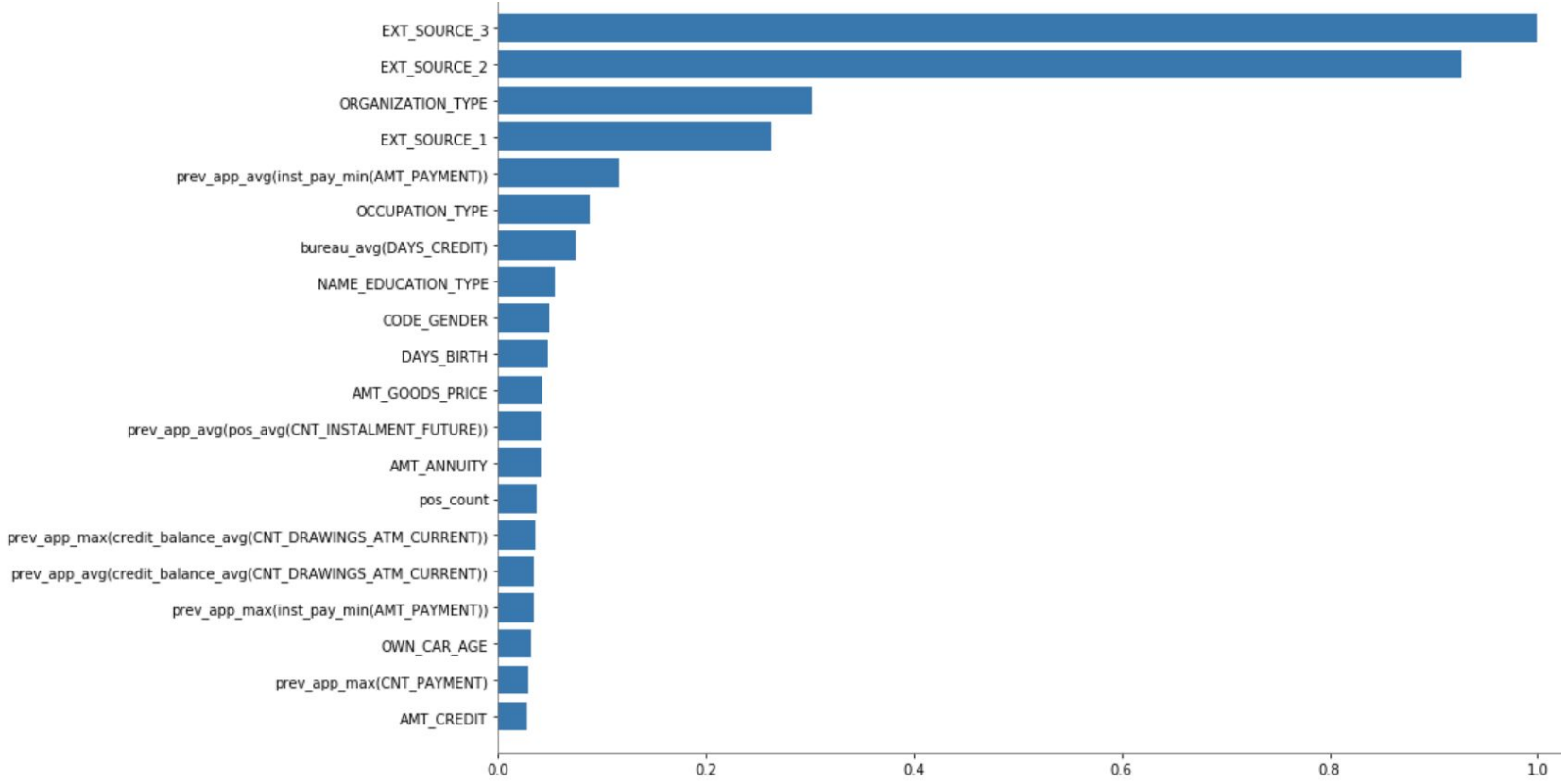
Training Data



X-Val



Evaluation - Gradient Boosting - Variable Import.



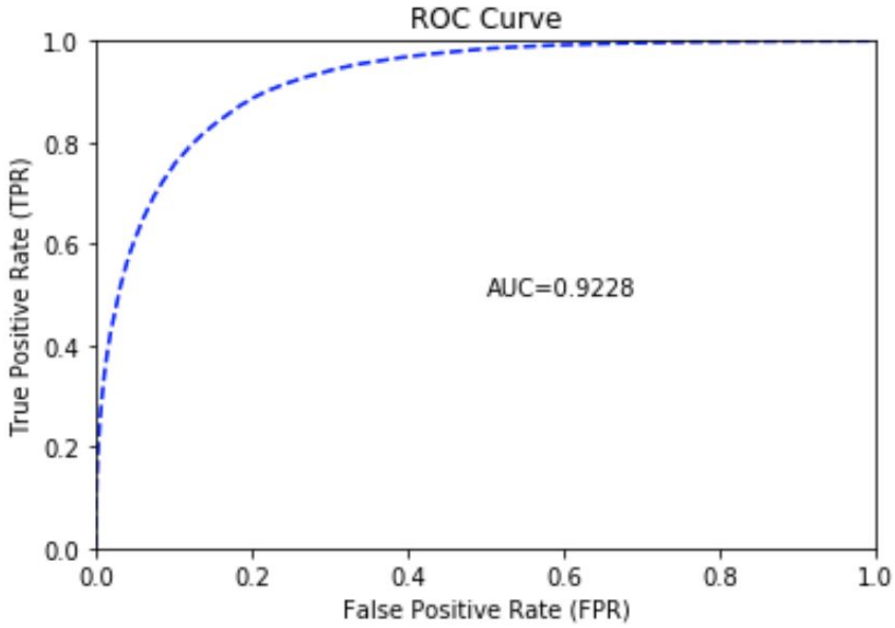
Evaluation - Auto ML - Leaderboard

model_id	auc	logloss	aucpr	mean_per_class_error	rmse	mse
StackedEnsemble_AllModels_AutoML_20200415_174004	0.781499	0.244769	0.274235	0.331792	0.259405	0.0672908
StackedEnsemble_BestOfFamily_AutoML_20200415_174004	0.780312	0.245245	0.271549	0.329684	0.259658	0.0674224
XGBoost_3_AutoML_20200415_174004	0.774454	0.241502	0.262289	0.337221	0.258688	0.0669193
GBM_2_AutoML_20200415_174004	0.773784	0.242093	0.260099	0.328162	0.258919	0.0670391
GBM_1_AutoML_20200415_174004	0.773303	0.242656	0.255131	0.343667	0.259274	0.0672231
GLM_1_AutoML_20200415_174004	0.767817	0.244274	0.247271	0.339984	0.259776	0.0674837
XGBoost_1_AutoML_20200415_174004	0.747644	0.254152	0.227684	0.353298	0.264116	0.0697572
XGBoost_2_AutoML_20200415_174004	0.730124	0.265823	0.213109	0.357364	0.267463	0.0715362
DRF_1_AutoML_20200415_174004	0.727893	0.255445	0.201658	0.364662	0.264182	0.0697924

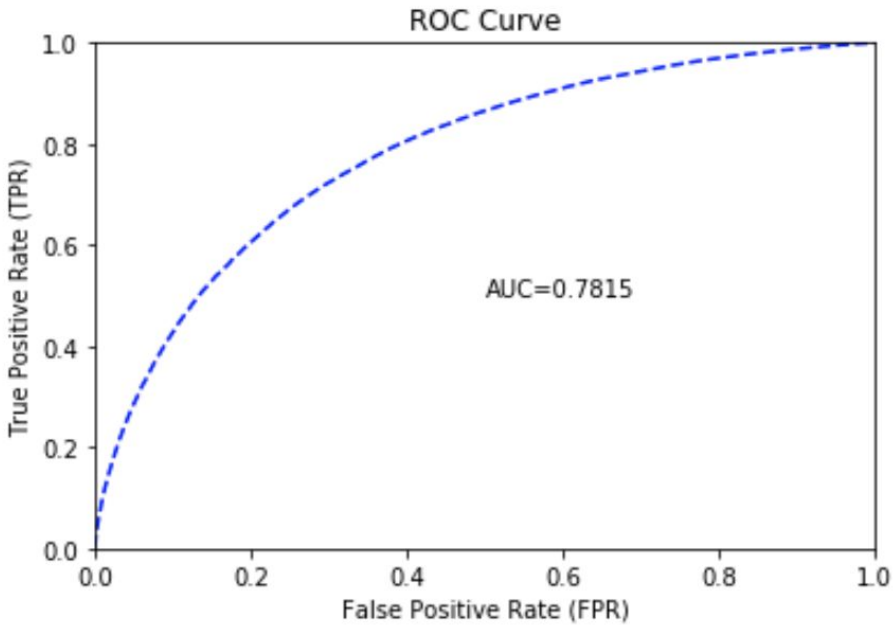
- Stacking uses a “meta learner” (not voting) to combine the predictions of “base learners.”
- XGBoost is an implementation of gradient boosted decision trees.
- Gradient boosting is a machine learning technique for regression and classification problems.
- Generalized Linear Models (GLM), a statistical technique for linear modeling.

Evaluation - Auto ML (stacked all models) - AUC

`Training Data`



`X-Val`



Deployment

Submission and Description	Private Score	Public Score
model_StackedEnsemble_AllModels_AutoML_20200417_084801.csv 9) Stacked - all models	0.64859	0.64591
model_StackedEnsemble_BestOfFamily_AutoML_20200417_084801.csv 8) Stacked - Best of Family	0.64994	0.64191
model_XGBoost_3_AutoML_20200417_084801.csv 7) XGBoost 3	0.61697	0.61366
model_GBM_2_AutoML_20200417_084801.csv 6) GBM 2	0.60121	0.59749
model_GBM_1_AutoML_20200417_084801.csv 5) GBM 1	0.60690	0.60892
model_GLM_1_AutoML_20200417_084801.csv 4) GLM 1	0.63787	0.64044
model_XGBoost_1_AutoML_20200417_084801.csv 3) XGBoost 1	0.57959	0.58255
model_XGBoost_2_AutoML_20200417_084801.csv 2) XGBoost 2	0.55632	0.55765
model_DRF_1_AutoML_20200417_084801.csv 1) DRF 1	0.61314	0.59860
model_gbm.csv 0) GBM	0.62484	0.61508

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