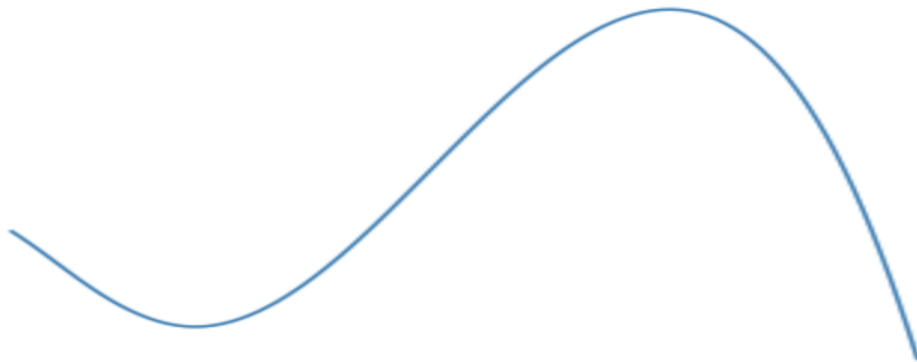# SPLINE-RULE ENSEMBLES

THE DUAL QUEST FOR INTERPRETABILITY AND PERFORMANCE IN CREDIT SCORING

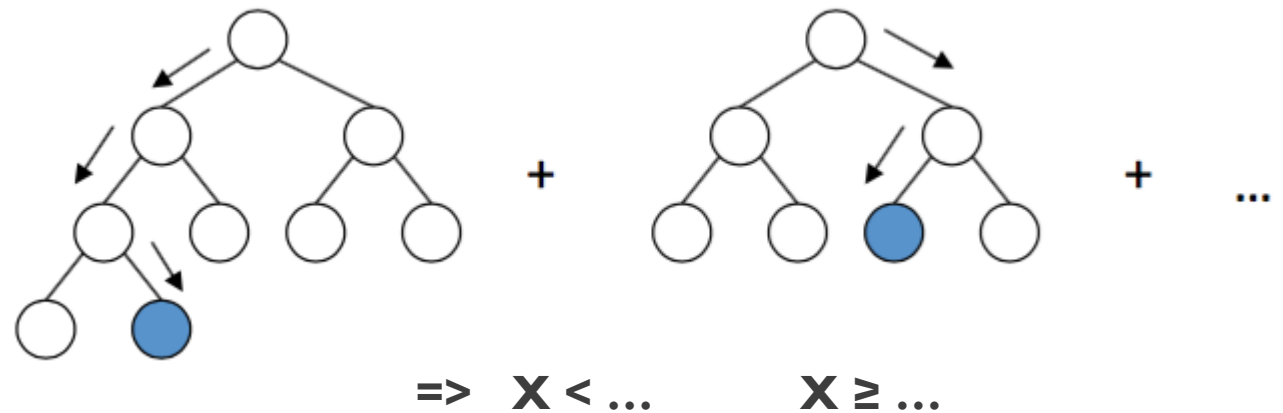# SRE

- **Spline fitting through GAM**
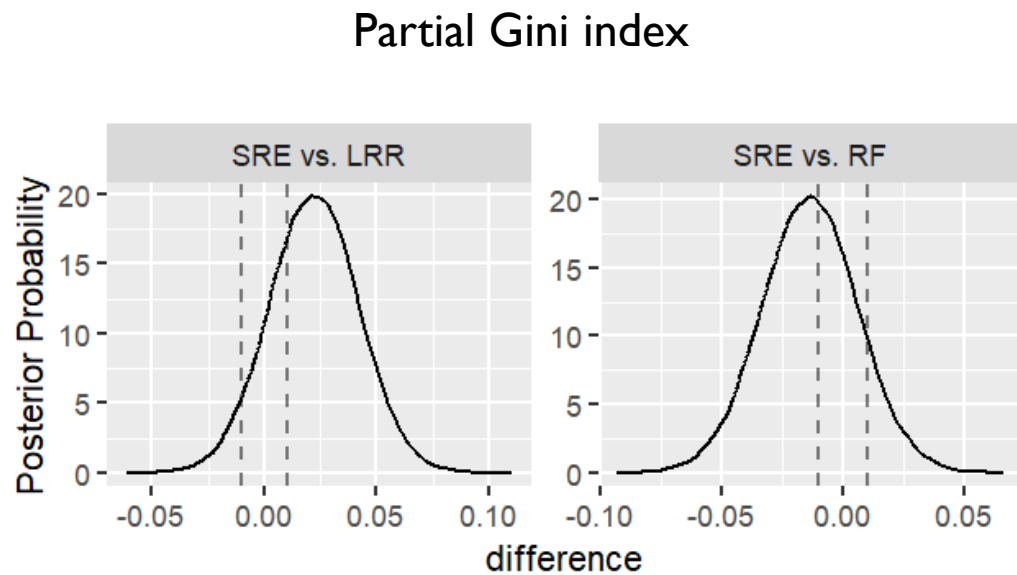- **Gradient boosted trees** *(RuleFit)*

=> **X < …   X ≥ …**

Minimize $L(y, a \times linear\ terms + b \times rule\ terms + c \times smooth\ terms)$

$+ \lambda \sum |parameters|$

EXPERIMENTAL SETUP

- **Partitioning**: 5x2 repeated CV

- **Benchmark algorithms**: Logistic regression, random forest, gradient boosting

- **Metrics**:
  - AUC
  - Brier Score
  - Partial Gini Index

- **Statistical comparison**:
  - Frequentist: (Pairwise) Friedman test
  - Bayesian signed-rank test (Benavoli et al., 2014)

RESULTS: SUMMARY

Partial Gini index

- SRE ≥ RE
- SRE ≥ LRR
- SRE ≤ RF

QUESTIONS