



Non-linear Machine Learning for Calibration and Classification

Course Description

This course offers a comprehensive overview of modern machine learning with an emphasis on supervised methods. Students begin by establishing a strong foundation in machine learning fundamentals—including essential nomenclature, clear definitions, and key quality metrics—while also exploring the critical concepts of bias vs. variance trade-off and the distinctions between supervised and unsupervised methods.

Course Outline

1. Introduction
 - Nomenclature and Definitions.
 - Methods: Unsupervised vs. Supervised.
 - Bias vs. variance trade-off.
 - Model Quality metrics.
2. Machine Learning Algorithms (Methods):
 - Locally Weighted Regression.
 - Support Vector Machines.
 - Artificial Neural Networks.
 - Gradient Boosted Decision Trees. (a brief overview)
 - Model Fusion (Model Ensembles)
3. Variable Contribution (Approaching Model Interpretability)
4. Choosing the Right Method and Final Remarks:
 - Computational performance, and deployment options for effective model selection.

Course Instructor

Barry M. Wise. President, Eigenvector Research, Inc.