



JOHNS HOPKINS

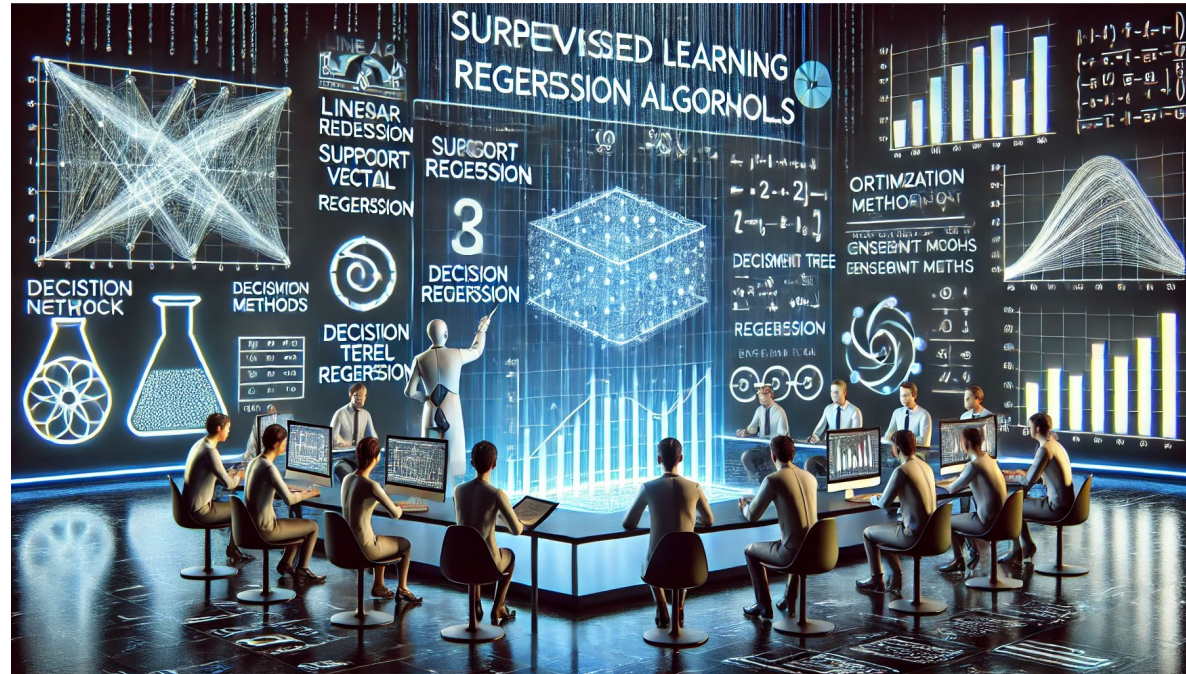
WHITING SCHOOL
of ENGINEERING

685.621 Algorithms for Data Science

Supervised Learning: Regression

Module Learning Objectives

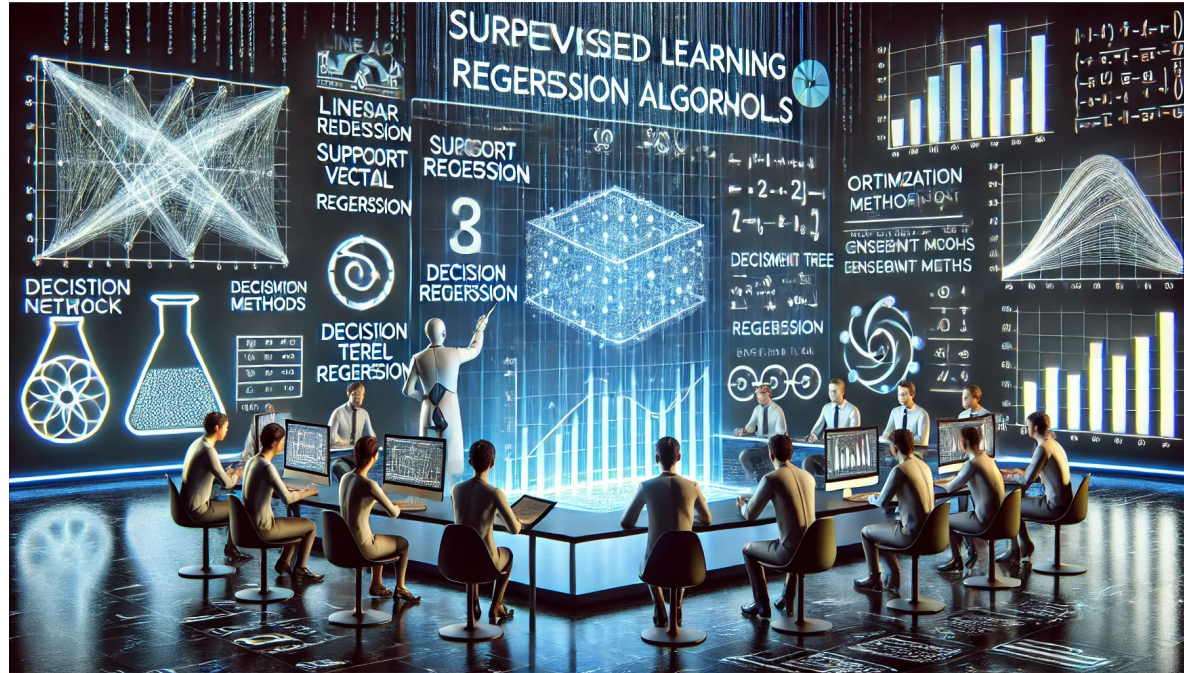
- 9.1 Explain the fundamental principles of supervised learning regression and its role in modeling relationships between dependent and independent variables.
- 9.2 Apply regression techniques such as linear regression, support vector regression, decision tree regression, and ensemble methods to solve real-world problems.
- 9.3 Analyze the mathematical foundations of regression models, including cost functions, optimization methods, and correctness proofs.



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Module Learning Objectives

- 9.4 Compare the advantages and limitations of different regression algorithms in terms of complexity, interpretability, and performance.
- 9.5 Evaluate model selection strategies, including cross-validation, information criteria, and hyperparameter tuning for optimizing regression models.
- 9.6 Implement regression models using scikit-learn and assess their effectiveness using appropriate performance metrics.
- 9.7 Design regression workflows that incorporate preprocessing, feature engineering, and computational scalability techniques to handle large datasets.



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Supervised Learning Regression: An Overview

Supervised learning regression is the process of predicting continuous numerical values based on labeled training data

Key Features

Continuous Output Prediction

Minimization of Error



Applications

Prediction

Forecasting

Medical Diagnosis



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