



COLLABORATE19

TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

Modern Machine Learning

With Oracle Analytics Cloud and
Oracle Autonomous Data
Warehouse Cloud

Remember to complete your evaluation for this session within the app!

Session ID:
11086

Prepared by:
Tim and Dan Vlamis

Vlamis Software Solutions

April 10, 2019

#C19TX

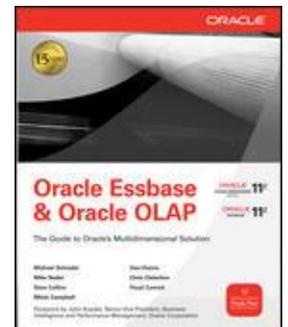
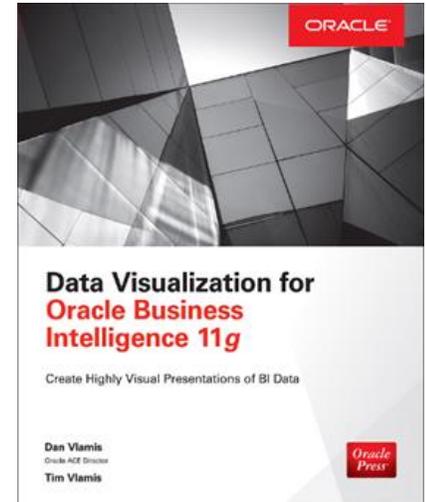
Vlamis Software Solutions

- Vlamis Software founded in 1992 in Kansas City, Missouri
- Developed 200+ Oracle BI and analytics systems
- Specializes in Oracle-based:
 - Enterprise Business Intelligence & Analytics
 - Analytic Warehousing
 - Data Mining and Predictive Analytics
 - Data Visualization
- Multiple Oracle ACEs, consultants average 15+ years
- www.vlamis.com (blog, papers, newsletters, services)
- Co-authors of book “Data Visualization for OBI 11g”
- Co-author of book “Oracle Essbase & Oracle OLAP”
- Oracle University Partner
- Oracle Gold Partner

ORACLE EDUCATION RESELLER

ORACLE Gold Partner

Specialized
Oracle Business Intelligence
Foundation Suite 11g





Presenter Background

Dan VlamiS – President

- Founded VlamiS Software Solutions in 1992
- 30+ years in business intelligence, dimensional modeling
- Oracle ACE Director  
- Developer for IRI (expert in Oracle OLAP and related)
- BIWA Board Member since 2008
- BA Computer Science Brown University
- @dvlamis

Tim VlamiS – Vice President & Analytics Strategist

- 30+ years in business modeling and valuation, forecasting, and scenario analyses
- Oracle ACE  
- Instructor for Oracle University's Predictive Analytics, Data Mining, and Oracle R Enterprise Courses
- Professional Certified Marketer (PCM) from AMA
- MBA Kellogg School of Management (Northwestern University)
- BA Economics Yale University
- @TimVlamiS

What is Machine Learning?

- The application of advanced analytics algorithms which automatically update their predictions over time.

Many Words Used for Similar Concepts

Predictive Analytics

Regression Data Mining

SQL Analytics Anomaly Detection

Python Adaptive Intelligence

Data Science

Diagnostic Analytics

Classification

AI

Advanced Analytics

Algorithm Descriptive Analytics

SQL R

Clustering

Artificial Intelligence

Prescriptive Analytics

Machine Learning

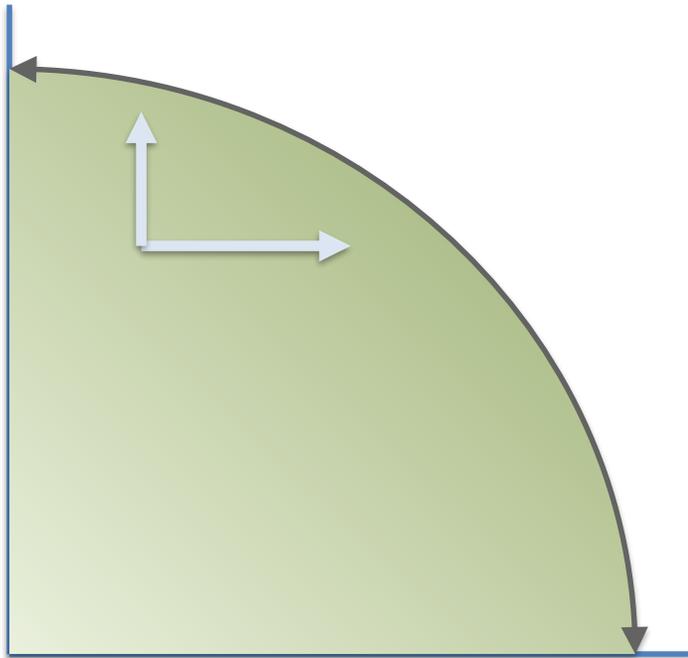


Many Options for ML in OAC

- Work in OAC Data Visualization Project
 - One-click options
 - Use built-in scripts via My Calculations
 - Automated data enrichment in Prepare tab
 - Use Explain for data profiling and unsupervised learning
 - Upload and call custom scripts
- Train and apply models in Data Flows
- Work in “edit formula” in Criteria Tab in Answers Analysis
- Apply custom scripts in Repository
- Connect to Oracle Advanced Analytics in Oracle Database Cloud Service (High Performance or Extreme Performance)
 - Oracle Data Mining
 - Oracle R Enterprise
- Connect to Oracle Machine Learning in Autonomous Data Warehouse Cloud Service

Tradeoffs Abound

- Explanatory power and transparency vs. Accuracy
- Automated data prep vs. conscious data shaping choices
- Clear visualizations vs. multi-dimensional transforms and relationships
- Ease of use vs. computational understanding



Demo of Single-click ML with use cases and limitations

- Clustering
- Outliers
- Trend
- Forecast

Single-click ML Don'ts

- Do not overinterpret
- Do not stop
- Do not spend a lot of time when you have more powerful tools

Demo of Explain with use cases and limitations

Building Models in Data Flows (demo)

- Training and testing supervised models
- Classification methods and algorithms in OAC
- Interpretation of results
 - Confusion matrix
 - Accuracy, precision, and recall
 - ROC curve
- Visualizing classification results
- Applying classification models
- Use cases

Other ML Models in OAC Data Flows

- Sentiment analysis
- Regression
- Clustering

Oracle Machine Learning in Autonomous Data Warehouse

- In-database machine learning
 - Don't move the data
 - Extreme power and scalability
 - Extreme flexibility and extendibility
- Zeppelin Notebooks
 - Great for collaboration
 - Powerful tool in the hands of knowledgeable
 - Built-in visualization capability
 - Script development and management
- Oracle Data Mining Algorithms

Demo of Oracle Machine Learning in ADW

Oracle Data Miner in Database Cloud Service

- GUI for building predictive analytics workflows
- Build scripts for oracle database without coding
- Powerful built-in visualizations for interpretation

Demo of Oracle Data Miner



Questions to ask yourself

- Do we have people currently on staff who want to execute R or Python models inside the BI system?
- Where do you want to shape data sets for machine learning/predictive analytics?
- Do we currently have clean, consistent, accurate data?
- Do we have an executive champion who understands that systems with have to be grown over time?
- Do we want to start with training or a defined use case?

Advice

- Start simply and build
- Start (don't wait)
- Make sure data is clean and consistent
- Be careful of months (days and weeks often work better) with forecast
- Negative values can throw off some models
- Outliers can have very large effects
- Don't set Prediction Interval too high



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