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
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
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
- Python
- Diagnostic Analytics
- Classification
- AI
- Clustering
- Prescriptive Analytics

Data Science

- Advanced Analytics
- Algorithm
- Descriptive Analytics
- Artificial Intelligence

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
Session ID:

11086

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