Machine Learning Applications in the Real World

DATA SCIENCE ASSOCIATION

www.datascienceassn.org

michael.walker@datascienceassn.org

Rose Business Technologies

Clarity - Simplicity - Productivity

Michael Walker

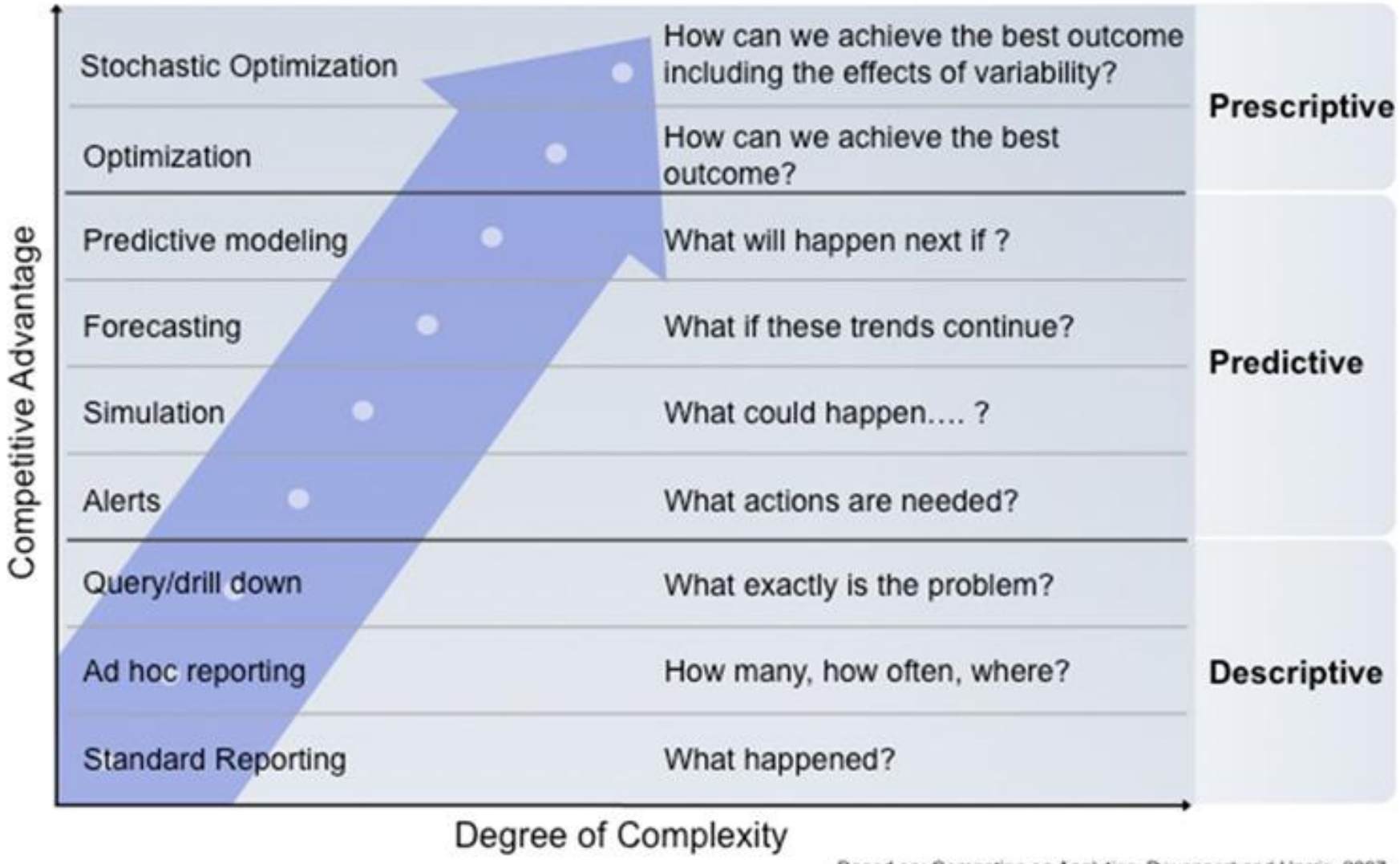
Managing Partner

720.373.2200

m@rosebt.com

http://www.rosebt.com

Types of Analytics



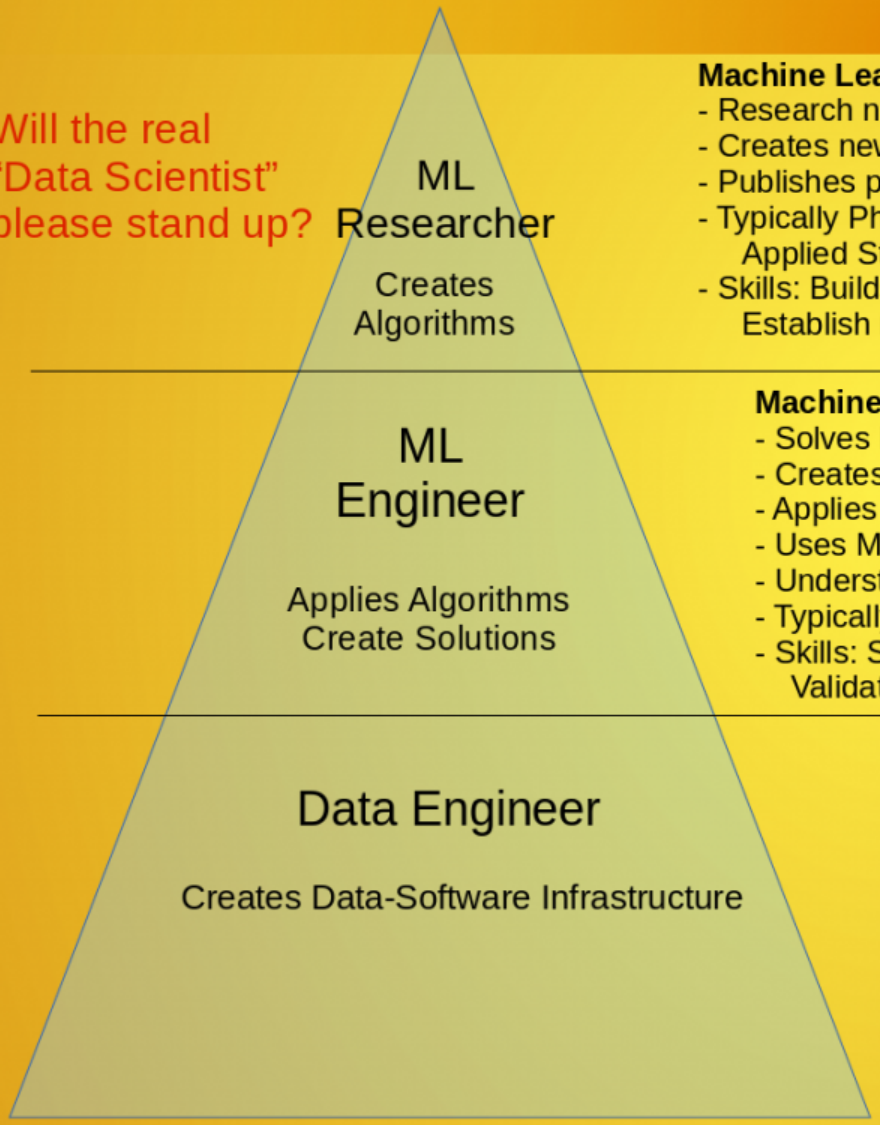
Based on: Competing on Analytics, Davenport and Harris, 2007

Machine Learning Definition

Continuously upload new data to improve and modify a set of algorithms in processes that continuously inform and improve functional capabilities.

Machine Learning Skills Pyramid v1.0

Will the real "Data Scientist" please stand up?



Machine Learning Researcher/Scientist:
- Research novel machine learning problems
- Creates new mathematical models and algorithms
- Publishes papers on research results
- Typically PhD/MA Level: Robotics, Machine Learning, Cognitive Science, Applied Statistics, Engineering, Operations Research, Math, etc.
- Skills: Builds mathematical models, Breaks ground in research, Establish new paradigms, Scientific Formalism, Experiment design

Machine Learning Engineer:
- Solves business/data learning problems
- Creates ML solutions to achieve an organization's objective
- Applies established algorithms
- Uses ML algorithm libraries
- Understands strengths and weaknesses of different algorithms
- Typically BS/MA Level: Computer Science, Math, Other Technical
- Skills: Software Eng. PLUS Data Analysis, ML Algorithm Selection, Cross Validation, Metrics/Scoring, Feature Engineering

Data Engineer:
- Develops code in support of Machine Learning Solutions
- Data extraction, transformation, scraping, joining, cleaning
- Summary Statistics, counting, sampling on request
- Skills: Platform/DB/Language specific expertise, Performance, Parallel and Distributed Computing, Quality, Reliability, Map/Reduce-Hadoop, VMs/Cloud, SQL/noSQL, Production Scaling etc.

Machine Learning Domains

Finance
Retail
Marketing / sales
Human resources
E-commerce / advertising
Health care / biotech / pharma
Legal system / law enforcement
National and business security
Government services
Non-profit / education
Energy
Manufacturing / IOT

Machine Learning Applications

Dynamic pricing capabilities
Decision support systems
Predict market trends
Predict customer needs
Create customized offers for each segment and channel
Predict changes in demand and supply - supply chain
Hire the right people
Manage the workforce
Predict who is likely to quit their job
Predict market-price volatility - production plans
Manage risk

Machine Learning Applications

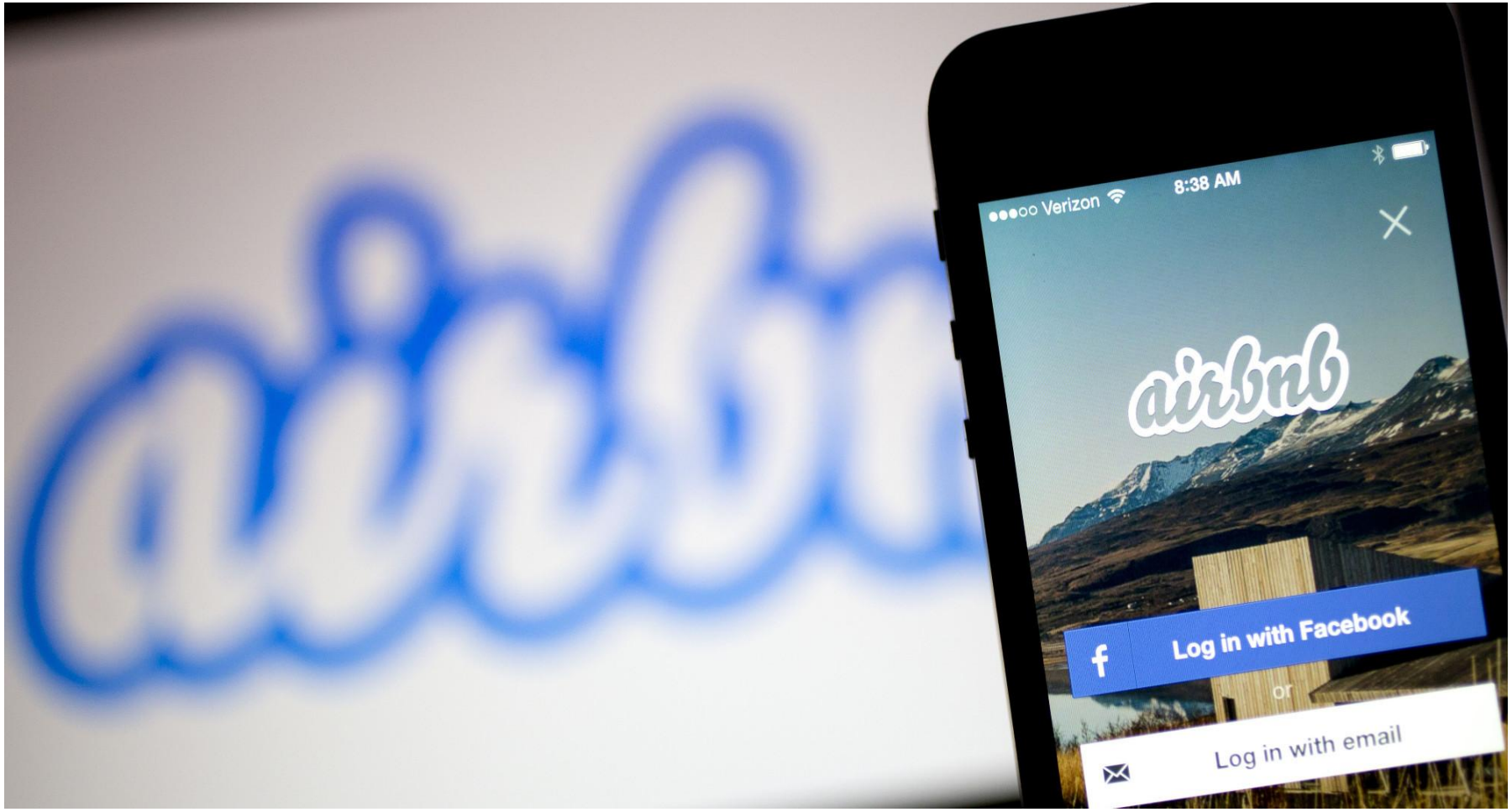
Fraud detection
Collection analytics
Cross-selling
Customer retention
Portfolio design and management
Product design
Economic forecasts
Insurance underwriting

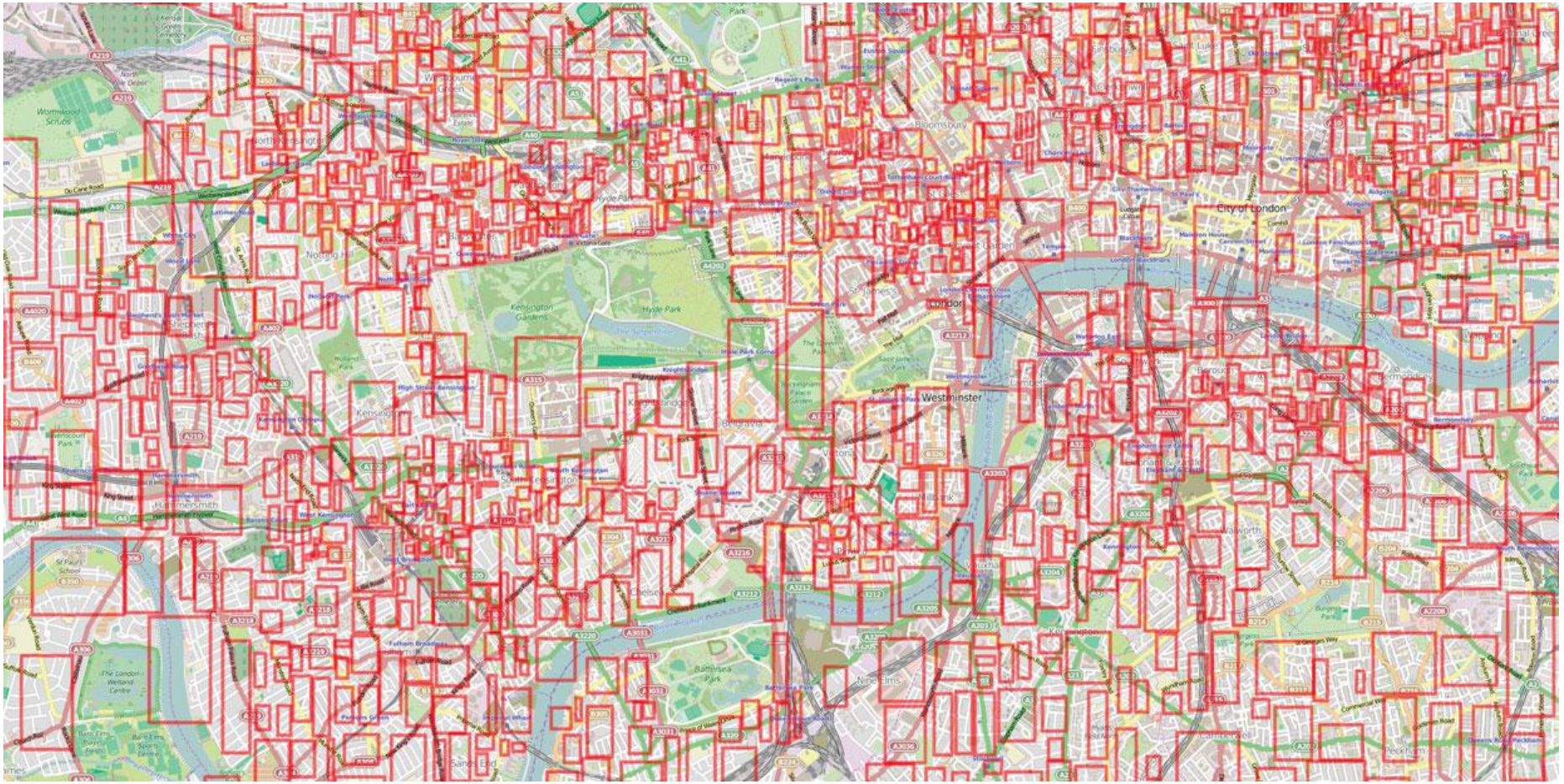
Machine Learning Applications

Business - Dynamic Pricing Capabilities
Health-care
Finance
Marketing
Decision Support Systems

Dynamic Pricing Capabilities


ORBITZ
Sabre
HomeAway
priceline.com
Travelport
tripadvisor
Expedia
AMADEUS
airbnb
skyscanner
cheapOair
VEGAS
.com


Verizon
8:38 AM
airbnb
Log in with Facebook
or
Log in with email

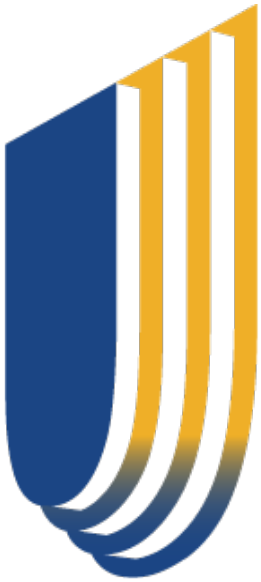

City of London
Westminster
Hyde Park
Kensington Gardens
Bloomsbury
Wormwood Scrubs
Battersea Park


Price
SXSW
SXSW
Austin City Limits
Music Festival
1/14
4/14
7/14
10/14
1/15
4/15
7/15

UBER


Walmart
SM
Save money. Live better.

Health-care



UnitedHealth Group℠

lumiata

Employs machine learning to generate multi-dimensional probability distribution graph containing tens of thousands of nodes (e.g., symptoms, diseases and patient data points) and their weighted connections strengths in real-time.

Results can help identify patients who need urgent hospitalization, follow-up visits, medication plan, etc.

Raised 10 Million in VC

ENLITIC

Employs deep learning to assist doctors in the diagnosis and prognosis of diseases.

Compares patient data (radiology, pathology, genomic, EHR, etc.) with similar data from millions of other patients to build its decision case.

Raised 5 Million in VC

Personalized physiology data analytics platform - works with body sensors. Calculates summary indices based on vital health inputs signs and acts as an early warning detection system.

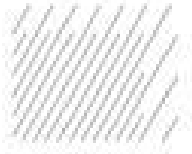
Builds a personalized machine learning model for each patient that focuses on comparing patient data (heart rate, respiration rate, oximetry, and blood pressure, etc.) with her own baseline indicators and not with the population mean.

Raised 4.6 Million in VC

Finance


Goldman
Sachs

Renaissance



TWO SIGMA

Marketing

Machine Learning Scenarios for Retail

A/B Testing
Recommendation Engines
Predictive Maintenance
Retail Fraud
Price Optimization - dynamic pricing algorithms
Inventory Forecasting
Location Analytics


Walmart
SM
Save money. Live better.


amazon


facebook

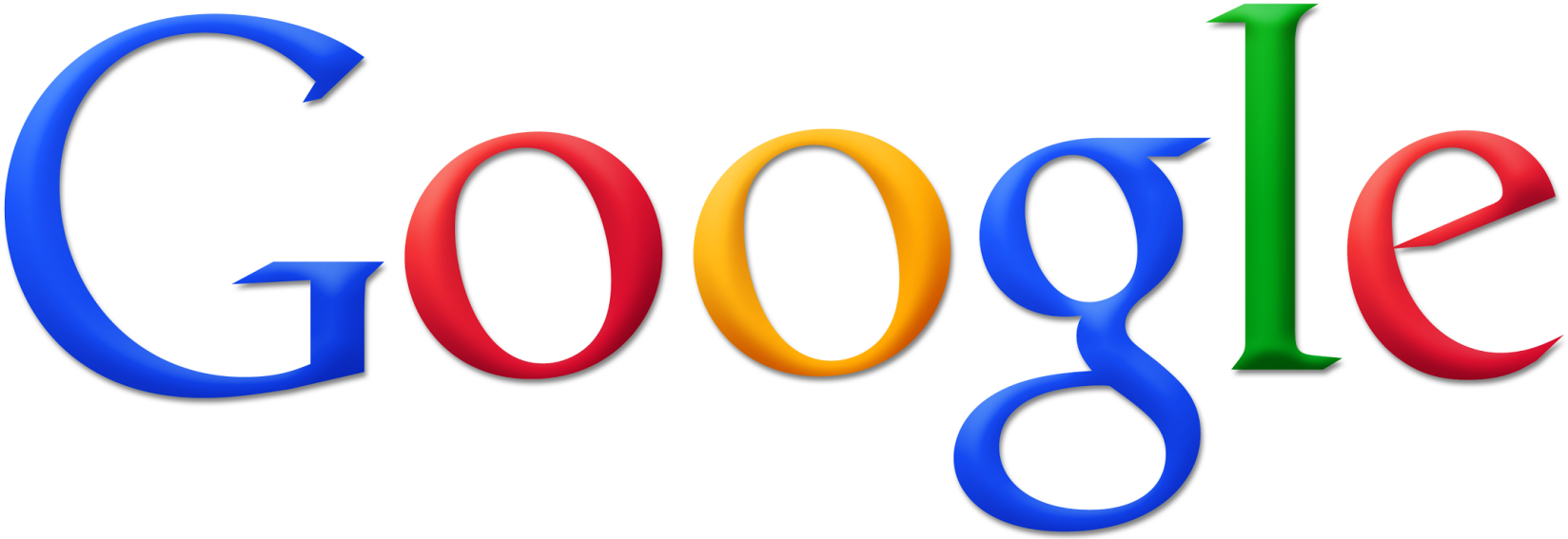

LinkedIn

GILT


Ford


TARGET®

Decision Support Systems


Google


NETFLIX


UNITED STATES
ARMY


UNITED STATES
NAVY


UNITED STATES
MARINE CORPS


UNITED STATES
AIR FORCE


UNITED STATES COAST GUARD
SEMPER
PARATUS
1790


NATIONAL GUARD
ALWAYS READY ALWAYS THERE


DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA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Goldman
Sachs


FedEx
®

IBM Watson

Thank You

Presentation by:

Michael Walker

Rose Business Technologies

720.373.2200

m@rosebt.com

http://www.rosebt.com