Various Use cases where one can apply Data Engineering/ Data Science.

Financial services use cases

Effective customer engagement

Customer profiles Credit history Transactional data LTV Loyalty



Customer analytics

degree evaluation Customer segmentation Reduced customer churn

Customer 360

Underwriting, servicing and delinquency handling
Insights for new products

Faster innovation for a better customer experience

Decision services management

Customer segmentation
CRM data
Credit data
Market data



Financial modeling

Commercial/retail banking, securities, trading and investment models

Decision science, simulations and forecasting

Investment recommendations

Improved consumer outcomes and increased revenue

Risk and revenue management

Transaction data
Demographics
Purchasing history
Trends



Risk, fraud, threat detection

Real-time anomaly detection Card monitoring and fraud detection

Security threat identification Risk aggregation

Enhanced customer experience with machine learning

Risk and compliance management

CRM
Credit
Risk
Merchant records
Products and services



Credit analytics

Enterprise DataHub
Regulatory and
compliance analysis
Credit risk management
Automated credit analytics

Transform growth with predictive analytics

Recommendation engine

Clickstream data
Products
Services
Customer service data



Marketing analytics

Predictive analytics and targeted advertising Fast marketing and multichannel engagement

Recommendation engine

Customer sentiment analysis

Improved customer engagement with machine learning

Health and life sciences use cases

DNA sequences

FAST-Q BAM SAM VCF Expression



Genomics and precision medicine

Single cell sequencing
Biomarker, genetic, variant
and population analytics
ADAM and HAIL on Databricks

Faster innovation for drug development

Real world analytics

837 Pharmacy Registry EMR



Clinical and claims data

Claims data warehouse Readmission predictions

Efficacy and comparative analytics

Prescription adherence

Market access analysis

Improved outcomes and increased revenue Image deep learning

MRI X-RAY CT Ultrasound



GPU image processing

Graphic intensive workloads

Deep learning using Tensor Flow

Pattern recognition

Diagnostics leveraging machine learning Sensor

Readings Time series Event data



IoT device analytics

Aggregation of streaming events

Predictive maintenance Anomaly detection

Predictive analytics transforms quality of care

Social data listening

Social media Adverse events Unstructured



Social analytics

Real-time patient feedback via topic modelling

Analytics across publication data

Improved patient communications and feedback

Media and entertainment use cases

Personalized recommendations

Customer profiles Viewing history Online activity Content sources Channels



Content personalization

Personalized viewing and engagement experience Click-path optimization Next best content analysis Improved real time

ad targeting

Faster innovation for customer experience

Effective customer retention

Customer profiles
Online activity
Content distribution
Services data



Customer churn prevention

Quality of service and operational efficiency Market basket analysis

Customer behavior analysis Click-through analysis

Improved consumer outcomes and increased revenue

Information optimization

Consumption logs Clickstream and devices Marketing campaign responses



Recommendation engine

Ad effectiveness
Content monetization
Fraud detection
Information-as-a-service
High value user engagement

Enhance user experience with machine learning

Inventory allocation

Transactions
Subscriptions
Demographics
Credit data



Predictive analytics

Predict audience interests

Network performance and optimization

Pricing predictions

Nielsen ratings and projections

Mobile spatial analytics

Predictive analytics transforms growth

Consumer engagement analysis

Content metadata
Ratings
Comments
Social media activity



Sentiment analysis

Demand-elasticity

Social network analysis

Promotion events time-series analysis

Multi-channel marketing attribution

Improved consumer engagement with machine learning

Retail use cases

Recommendation engine

Customer profiles Shopping history Online activity Social network analysis



Next best and personalized offers

Customer 360/consumer personalization

Right product, promotion, at right time

Multi-channel promotion

Faster innovation for customer experience

Effective customer engagement

Shopping history Online activity Floor plans App data



Store design and ergonomics

Path to purchase In-store experience

Workforce and manpower optimization

Improved consumer outcomes and increased revenue

Inventory optimization

Demand plans
Forecasts
Sales history
Trends
Local events/weather
patterns



Data-driven stock, inventory, ordering

Predict inventory positions and distribution

Fraud detection

Market basket analysis

Omni-channel shopping experience with machine learning

Inventory allocation

Demographics
Buyer perception
Consumer research
Market/competitive analysis



Assortment optimization

Economic modelling
Optimization for foot traffic,
Online interactions
Flat and declining categories

Predictive analytics transforms growth

Consumer engagement

Historical sales data

Price scheduling

Segment level price changes



Real-time pricing optimization

Demand-elasticity
Personal pricing schemes
Promotion events
Multi-channel engagement

Improved consumer engagement with machine learning

Advertising and marketing tech use cases

Effective customer engagement

Customer profiles Online history Transaction data Loyalty



Customer value analytics

Customer 360, segmentation aggregation and attribution

Audience modelling/index report

Reduce customer churn Insights for new products

Historical bid opportunity as a service

Faster innovation for customer growth

Recommendation engine

Customer segmentation
CRM data
Credit data
Market data



Next best and personalized offers

Right product, promotion, at right time

Real time ad bidding platform

Personalized ad targeting

Ad performance reporting

Improved outcomes and increased revenue

Risk and fraud analysis

Transaction data Demographics Purchasing history Trends



Risk and fraud management

Real-time anomaly detection

Fraud prevention

Customer spend and risk analysis

Data relationship maps

Risk management with machine learning

Campaign reporting analytics

CRM

Merchant records

Products

Services

Marketing data



Sales and campaign optimization

Optimizing return on ad spend and ad placement

Multi-channel promotion

Ideal customer traits

Optimized ad placement

Predictive analytics transforms growth

Brand promotion and customer experience

Social media
Online history
Customer service data



Sentiment analysis

Opinion mining/social media analysis

Deeper customer insights

Customer loyalty programs

Shopping cart analysis

Improved customer engagement with machine learning

Oil, gas, and energy use cases

Upstream optimization, maximize well life

Field data
Asset data
Demographics
Production data



Digital oil field/ oil production

Production optimization Integrate exploration and seismic data

Minimize lease operating expenses Decline curve analysis

Faster innovation for revenue growth

Grid operations, asset inventory optimization

Sensor stream data UAVs images Inventory data Production data



Industrial IoT

Pipeline monitoring
Preventive maintenance
Smart grids and microgrids
Grid operations, field service
Asset performance
as a service

Improved outcomes and increased revenue

Supply-chain optimization

Transaction data
Demographics
Purchasing history
Trends





Supply-chain optimization

Trade monitoring, optimization

Retail mobile applications

Vendor management construction, transportation, truck and delivery optimization

Optimizing supplychain with machine learning

Risk optimization

Sensor stream data
Transport
Retail data
Grid production data
Refinery tuning parameters



Safety and security

Real-time anomaly detection Predictive analytics Industrial safety Environment health and safety

Predictive analytics transforms safety and security

Recommendations engine

Clickstream data
Products
Services
Market data
Competitive data
Demographics



Sales and marketing analytics

Fast marketing and multi-channel engagement

Develop new products and monitor acceptance of rates

Predictive energy trading Deep customer insights

Improved customer engagement with machine learning

Security use cases

Security controls to leverage

Firewall/network logs
Apps
Data access layers



Intrusion detection and predictive analytics

Prevention of DDoS attacks

Threat classifications

Data loss/anomaly detection in streaming

Cybermetrics and changing use patterns

Prevent complex threats with machine learning

Actionable threat intelligence

Firewall/network logs Network flows Authentications



Security intelligence

Real-time data correlation Anomaly detection Security context, enrichment Offence scoring, prioritization Security orchestration

> Faster innovation for threat prevention

Risk and fraud analysis

Firewall/network logs Web/app logs Social media content



Fraud detection and prevention

e-Tailing Inventory monitoring Social media monitoring Phishing scams Piracy protection

Risk management with machine learning

Compliance management

Firewall/network logs
Web
Applications
Devices
OS



Security compliance reporting

Ad-hoc/historic incident reports

SOC/NOC dashboards

Deep OS auditing

Data loss detection in IoT

User behavior analytics

Transform security with improved visibility

Identity and access management for analytics

Files

Tables

Clusters

Reports

Dashboards

Notebooks



Fine-grained data analytics security

Role-based access controls Auditing and governance File integrity monitoring Row level and column level access permissions

Limit malicious insiders to transform growth