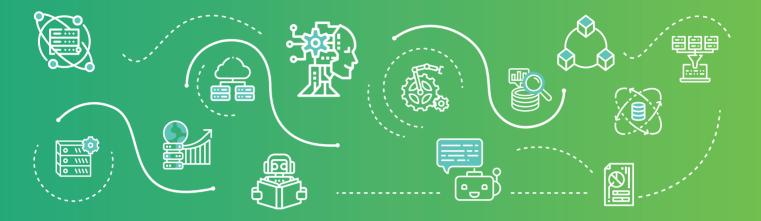# TMA Data Science Lab

maximizing the value of your data

400 developers

- AI & machine learning
- Big data & analytics

Clients from Europe, USA, Australia, New Zealand, Japan, Korea

- Telecom
- Banking
- Healthcare
- Pharmaceutical
- AgriTech
- E-commerce
- Retail
- Automotive
- Security
- Manufacturing

Sample applications

- Network Analytics
- Healthcare Analytics
- Machine Optimization
- RPA/Document Parser
- Cyber Security
- Identity Analytics
- Brand Detection
- Student Analytics
- Traffic Analytics
- Agriculture Data Analytics
- Surface Analysis
- Distribution Analytics & Forecasting
- Social Network Content Analytics
- Personalized Car Navigation

AI & Machine Learning

Check Technical Feasibility Find Technical Solutions	Build Product Prototypes
Design & Implement R&D Projects	Build & Operate Your Innovation Centers

Sample AI/ML Projects

Project	Description	Technology
Machine Optimization	A comprehensive solution combining Smart Device Framework, Predictive Maintenance, Machine Performance Optimization, and Edge Data Secured Processing to control, monitor, optimize device performance and reduce energy consumption.	• Reinforcement learning • Fuzzy logic • Data prediction • Time series • IoT
RPA/Document Parser	Apply AI/ML/NLP/OCR to automate business processes to increase productivity and reduce manual work and time Engine to extract contents from scanned documents • Structured documents • Un-structured documents	• AI/ML, deep learning • NLP • OCR • Computer vision • Tensorflow • Support Vector Machine • K-means • Collaborative filtering
Student Analytics	• Analyze student personalities, strengths and weaknesses based on past test results • Propose personalized learning contents and tests for each student • Propose appropriate learning path, courses and lessons	• AI/ML • Data analytics
Brand Recognition	Auto identify brands in advertisements: • Labeling • Product recognition • Brand recognition	• AI/ML, deep learning • Object detection • OpenCV • NLP • Tensorflow
Personalized Car Navigation	• POI search function on car • Result list ranked and optimized based on learned user interests, preferences	• AI/ML • Matrix factorization
Check Vehicle Parking by Drone	Drone to fly in certain area and pre-defined schedule to check if any vehicle is parking in a wrong place	• AI/ML • Object detection • Video streaming

Big Data & Data Analytics

Data warehouse and data mining design and implementation

Collect and analyze data in real-time Data integration and aggregation

Data visualization

Standard and custom reports

Data analytics and forecasting

Analyzing high volume structured and unstructured data

Data migration

Sample Big Data & Analytics Projects

Project	Description	Technology	
Network Analytics	• Monitor and analyze performance of network devices • Ensure high scalability and capacity	• Spark • Hadoop	• Kafka • Redis
Distribution Analytics & Forecasting	• Supply chain and product distribution analytics • Consolidating data from multiple systems into a single source • Providing a global visibility of distribution inventory across the countries. • Standard and custom reports • Sale analytics and forecasting	• SSRS, SSIS • Data Warehouse • Data Mart • Crystal reports • Cognos reports • QlikView • Paradox	
Cyber Security	Analyze log data in real-time: • Attack statistics • Real-time attack monitoring • Malware alert	• Spark • Kafka • Hive • Cloudera	• MongoDB • Cassandra • Teradata
Social Network Content Analytics	• Collect, track and report social network data • Analyze data for marketing campaigns	• Spark • Hadoop	• Redis • Cassandra
Traffic Analytics	• Collect and analyze traffic data in real-time • Speed profile	• Infrastructure: Hadoop, Map Reduce, Pentaho, MS BI Platform • Modeling/Analytics: Machine learning / data mining techniques (e.g. SVM, Neuron network...), R, Mahout • Reporting/BI: SSRS, Pentaho BI, Hive, 2D/3D map	
Surface Analysis	Visualize and analyze surface based on 3D images	• Mass spectrometry imaging(MSI) • Analyzing ToF-SIM data (multiple dimension) • Principal component analysis (PCA) algorithm • Bayes theorem • R Language	

AI & Machine Learning

Machine Learning
▸ Deep Learning: TensorFlow, Keras, Pytorch
▸ Federated Learning
▸ Descriptive Statistics

Reinforcement Learning
▸ Markov decision process
▸ Q-Learning and Deep Q-Networks

Supervised Learning
▸ Linear Regression
▸ Neural Networks
▸ Support Vector Machines

Unsupervised Learning
▸ K-Means Clustering
▸ Anomaly Detection
▸ Principal component analysis (PCA)
▸ Latent Dirichlet allocation (LDA)

MLaaS
▸ Google Cloud AI
▸ Microsoft Azure AI
▸ AWS AI

Computer Vision

Object Detection

NLP

Recommendation

Big Data & Data Analytics

Data Warehousing
▸ SSIS, SSRS
▸ Hbase, HDFS
▸ MongoDB, CouchDB, Cassandra, Teradeta

Frameworks
▸ Hadoop, Spark
▸ Kafka, Storm, Sqoop, Flume
▸ Mahout, Drill, Solr
▸ Druid, SnappyData, Cassandra
▸ Map Reduce, Pentaho

BI and Data Visualization
▸ Tableau, Splunk, Pentaho, QuickSight, PowerBI, Cognos, Jasper, Qlikview, Pentaho BI, Power View, Datazen

Predictive analytics
▸ Regression
▸ Classification
▸ Clustering
▸ Time Series

Programming
▸ Python, R, Java, Hive, Scala, SAS, SPSS

Platform
▸ Amazon, Google, Microsoft, Hadoop