# **Robotics & Al Innovation**

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СV.,

Alan Lee @OGCIO Seminar June 2020

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# Robotics AI & Big Data Analytics Use Cases

Partner in Data Intelligence

# Contents

About Us Digital Transformation Roadmap Robotics Other AI & Big Data Strategy



## Alan Lee

Contact: alan.lee@risksis.com Mobile: 60516869

Blockchain & Al Partnership:

Deloitte. pwc

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&

Simmons

#### Blockchain Eco-system:

Banks, HKMA, Ship Owners, Charterers, Traders, Chambers, Inspection, Insurer, Customs ...

## Official Big Data Partner: **Cloudera**



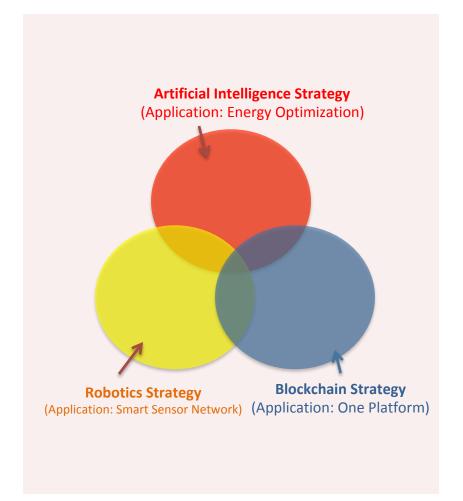
# **RISKSIS TECHNOLOGY**

- ✓ Big Data
- ✓ Artificial Intelligence
- ✓ Block-chain
- Robotics



RISKSIS

# **Digital Transformation Roadmap**



**Our Proposed 3-Pillors-Innovation Strategy** 



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# Robotic Customization

# **Customized Robot Example:** Fever Detection & Disinfectant





Medium-Size Robot

**Height: 1.7m** Ultra-Strong Motors High-precision Thermal Camera Big-LCD for Guard Display Obstacle Avoidance

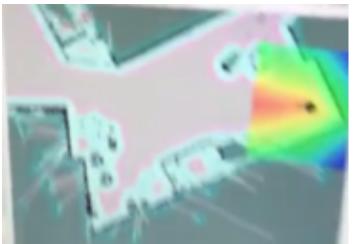


Small-Size Robot

Height: 0.9m High-precision Thermal Camera Strong Motors LCD for Cute-Display & Control Obstacle Avoidance

#### Thermal Camera Images

Picture on the left shows the robot detects temperature of our teammate sitting in shopping mall

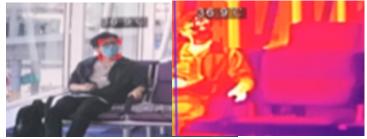


Autonomous Navigation





UV-Type





# More Al & System Development Examples

# **AI Client Examples in Different Industries**

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#### **Hong Kong Government**

#### **Smart Traffic – Predictive Analytics**

#### **Objective:**

- Predictive Analytics in Traffic Impact
- Real time Traffic Speed Prediction for Major Routes and Urban Roads
- Data Sources include historical speed data, rainfall data, news data,
- accident data, incidents data and many more.

#### Methodology:

Deep Learning - Big Data Artificial Intelligence



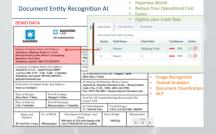
#### **Financial Institutions - Banks** AI - Entity Recognition Engine (Paper-to-Electronic Module)

#### Methodology:

Deep Learning - Big Data + Artificial Intelligence Objective:

- Big Variety of Document format cause rule-based OCR recognition difficult

- Al is used to OCR, recognize paper text and automate the data entry



#### **HVAC & Building Industry / Government** AI - Building Energy Saving

Client:

- **HK Government Data Center in China PRC**
- **Buildings in China**
- Methodology:
- **Reinforcement Learning Objective: Energy Saving**

#### **Logistic Company**

**Big Data Customer Statistical Analytics: Revenue Growth Strategy and Retention Strategy** Objective:

- Revenue growth of a client (
- The work of Alan's team:
- Our team collects data from many touch-points of clients such as sales data, marketing, customer service data, phone call data, logistics delivery data, warehouse operation data, email data, social media and transaction data.
- Statistician analysed the business scenario and designed the customer strategy using algorithms We deployed Big Data machine learning to automate the business strategy



#### **Global Technology Group Smart Home Big Data Cloud on Internet of** Things / Consulting / Training

#### **Objective:**

Our hardware team has developed Smart Home solution controlling electrical appliances via ZigBee wireless technology to control, monitor and provide intelligence.

We have streamlined the data to our big data server farm to provide intelligence for energy saving, product propensity and predictions.



**Global Network Security Group** AI – Cyber-security NLP Project

**Tertiary Education Big Data Employment & Industry Analysis** System

#### **Global Retailer**

#### **Big Data Recommendation Engine and E-**

#### commerce / Analytic Services

#### Objective:

Upsell/Cross-sell the retailer's product in E-commerce and Brick-and-mortar. Provide predictive insights on suggesting product and items in online and offline shop. Offline-to-Online (O2O) retail customer upsell by using multi-touch-point data

#### Algorithm Methodology

**Collaborative Filtering and Statistical Analysis** 

#### The work of Alan's team:

- Project Manager and business consultant conduct business due diligence
- Our statistician use Statistical Modules to analyze the business and fine tune the parameters on the prediction model by mathematics

Our software developers develop Big data machine learning modules to run the analysis



#### **Telecom Operators** Network Equipment Monitoring -**Big Data on Telecom Sensors Network**

#### **Project Example**

Telecom Equipment Tester: Our Proprietary hardware telecom equipment Mobile Application Front-end for Control: Technicians can use the mobile phone to remotely control and monitor the telecom equipment and infrastructure

#### **Big Data Analytics**

Use Big Data Technologies for large scale data collection from remote equipment Use Classical machine learning algorithms for time series predictions



Warehouse & Industry Associations Big Data & AI – Pose Recognition

Semi-Government Research Group Big Data & AI – Recruitment Trend on NLP on Market information

# Client Examples

Al Time Series in Smart City

## **Contact:**

Alan Lee alan.lee@risksis.com Tel: 60516869

## Hong Kong Government Smart Traffic – Predictive Analytics

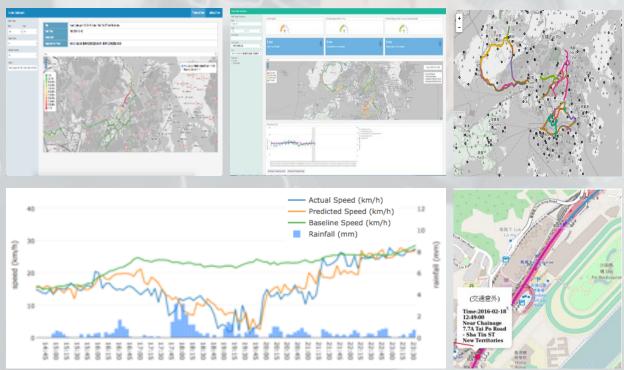


#### **Objective:**

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- Data Sources include historical speed data, rainfall data, news data, accident data, incidents data and many more.

## Methodology:

Deep Learning – Big Data Artificial Intelligence



# Client Examples

Al in Energy Saving

**Contact:** 

Alan Lee alan.lee@risksis.com Tel: 60516869

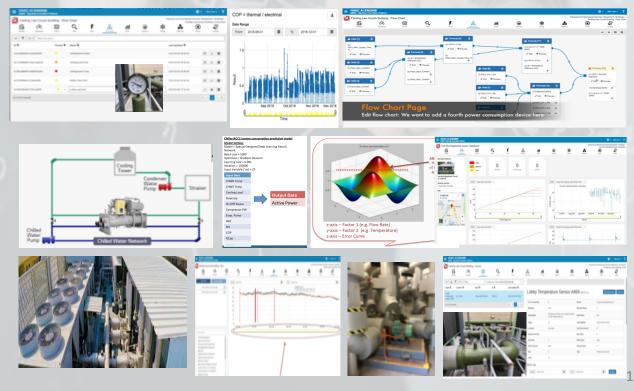
## **Electrical & Mechanical Energy Saving** AI Energy Saving & Optimization – HVAC Chiller

## **Objective:**

- Predictive Analytics in Energy Saving in Building Chiller System
- Data Collections from Building Sensors & External Data
- By suggesting different set-point settings of the system, back-test shows significant Energy Saving can be achieved

(Client: Government Clients; Some Commercial Clients) Methodology:

Deep Learning – Big Data Artificial Intelligence



# Client Examples

Al in Mechanics

Preventive Maintenance

## Contact:

Alan Lee alan.lee@risksis.com Tel: 60516869

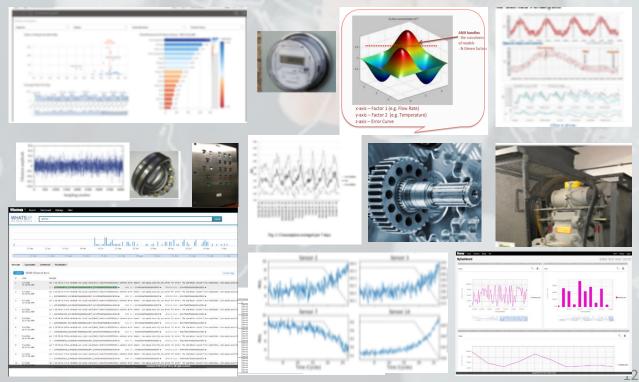
## Motors & Mechanical - Preventive Maintenance Al Preventive Maintenance

## **Objective:**

- Predictive Analytics in Preventive Maintenance
- Data Collected from Mechanical Sensors such as Vibrations, Stress.
- By Analyzing time series, predict probability of Fault; root cause analysis; Prioritization of Maintenance Works; Preventive Maintenance

#### **Methodology:**

Deep Learning – Big Data Artificial Intelligence



Al in Predicting Trends

### Contact:

Alan Lee alan.lee@risksis.com Tel: 60516869

# **Airline Industry** AI – Customer Number Time Series Trend Prediction

**Client: Airline clients** 

## **Objective:**

- Predictive Analytics in Customer Number & Trends
- Data Collected from Different Flights Records, Flights Configuration, Destination, Airlines, Holidays, Events, Economics etc.

## Achievement / Business Impact:

- Critical in Operation Team for resources planning
- Great Impact on the Profit / Loss of the Business in Control of Cost
- Important for the prevention of wastages of allocated resource

## Methodology:

Deep Learning – Big Data Artificial Intelligence



As requested by Client, pictures are not shown here.

Al in Revenue & Customer Strategy

**Contact:** 

Alan Lee alan.lee@risksis.com Tel: 60516869

## Logistic Company Big Data Customer Statistical Analytics: Revenue Growth Strategy and Retention Strategy Client: Global Logistics Client

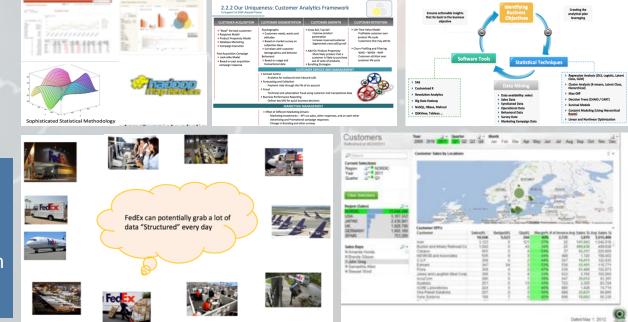
#### **Objective:**

- Revenue growth of a client

#### The work of Alan's team:

- Our team collects data from many touch-points of clients such as sales data, marketing, customer service data, phone call data, logistics delivery data, warehouse operation data, email data, social media and transaction data.

- Statistician analyzed the business scenario and designed the customer strategy using algorithms
- We deployed Big Data machine learning to automate the business strategy **Achievement:** Client successfully raise revenue objective with good satisfaction



Al in Image Document

(Document Image Classification, Information Retrieval)

# **Financial Institutions**

**AI - Entity Recognition Engine (Paper-to-Electronic Module)** 

## Methodology:

Deep Learning – Big Data + Artificial Intelligence **Objective:** 

- Big Variety of Document format cause rule-based OCR recognition difficult
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Big Data Recommendation

#### **Online-offline Strategy**



#### **Contact:**

Alan Lee alan.lee@risksis.com Tel: 60516869

# **Global Retailer**

## **Big Data Recommendation Engine and E-commerce**

#### **Objective:**

- Upsell/Cross-sell the retailer's product in E-commerce and Brick-and-mortar.
- Provide predictive insights on suggesting product and items in online and offline shop. Offline-to-Online (O2O) retail customer upsell by using multi-touch-point data.

#### Algorithm Methodology:

- Collaborative Filtering and Statistical Analysis

#### The work of Alan's team:

- Project Manager and business consultant conduct business due diligence
- Our statistician use Statistical Modules to analyze the business and fine tune the parameters on the prediction model by mathematics
- Our software developers develop Big data machine learning modules to run the analysis
- Our system architect provide service for data management and planning for integrating client's existing infrastructure
- We develop and automate using Big Data Technology
- Achievement: E-commerce revenue growth, O2O brick-and-mortar strategy insights

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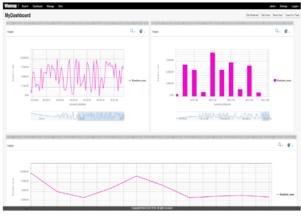




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AI & Big Data Network Equipment Monitoring

## [Telecom Operator ] Network Equipment Monitoring – Big Data on Telecom Sensors Network







Smart Meter Numeric Data Log Dashboard

#### **Client Example**

MNC telecom Operator

#### **Project Example**

- Telecom Equipment Tester: Our Proprietary hardware telecom equipment
- Mobile Application Front-end for Control: Technicians can use the mobile phone to remotely control and monitor the telecom equipment and infrastructure

## **Big Data Analytics**

- Use Big Data Technologies for large scale data collection from remote equipment and sensors.
- Use Classical machine learning algorithms for time series predictions

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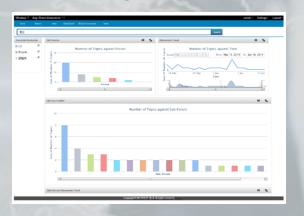
Alan Lee alan.lee@risksis.com Tel: 60516869

Client References [ Logistics Association ] AI – Activity Recognition	<ul> <li>[ Manufacturing Clients ]</li> <li>Machine Motor Abnormality Detection &amp; Predictive Maintenance (Al)</li> <li>Client Example:</li> <li>Factory Plants with 150,000 sq feet</li> <li>Machine Predictive Maintenance</li> </ul>	<section-header><section-header></section-header></section-header>
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# More Big Data / AI Product References

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## **Big Data Social Media Data** Search Engine



## Wall-Street High-Frequency Trading Algorithmic Engine

# **Big Data Document Management System**

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Log Files Management and Searching

Log Management

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High Speed Big Data Document Text Searching

## Secure Real-Time IP Phone System









## **Mobile Apps**



