Applying Machine Learning to Optimize the Supply Chain: How IoT Will Revolutionize Supply Chain in 2019

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Presenters

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Agenda

Fellow Background

The Internet of Things - IoT – Supply Chain overview

An example of a Supply Chain tracking solution

Why Applied Machine Learning is necessary

Questions
Innovative & Creative Technology Solutions

Fellow Inc. designs and develops cutting-edge, innovative core technologies and builds products by working with key manufacturing partners through strategic relationships. Fellow has multiple national and international patents granted and pending for its technologies.
The Supply Chain Revolution in Real Time

• Tracking and protecting your most valuable assets has never been easier

• IoT devices overcome the shortfalls of traditional tracking technology
The Supply Chain Revolution in Real Time

• IoT solutions offer:
  • Flexibility
  • End-to-end view
  • Affordability
  • Real time updates
The Supply Chain Revolution in Real Time

• Monitor the location and condition of goods as they travel
• Offer improved security for warehouses and fleet vehicles
Asset Tracking

• Barriers that traditional tracking technology comes up against are being broken

• Affordable, easy to install, easy to maintain, and available worldwide

• Devices can run for months without a battery or device charge

• Work both indoors and outdoors
Asset Tracking

- Trackers transmit location data from fleets of returnable containers
- Transmit valuable information on the whereabouts of other deliveries
- Offers value chain security, efficiency, and peace of mind
Monitoring Conditions

• IoT, machine learning, and AI provide better insights into:
  • Quality control
  • Traceability
  • Responsibility boundaries
• Tracking ensures safety for assets, timeliness, and condition status
Security Where You Need It

• Most security alarms are connected via GSM
• GSM jammers are widely available on the market
• Anyone can break in, steal, or vandalize your most valuable assets
Security Where You Need It

• Radically creative IoT solutions protect facilities from threats

• Tackle the problems with alarm system downtime and jamming
Manufacturing: Industry 4.0

- Manufacturing is moving into Industry 4.0
- Harness the power of data with the newest IoT solutions
- IoT solutions help cut cost and streamline daily operations
- Gain new analytical insight
Digitization Optimization

• Using data, IoT solutions can optimize the manufacturing process

• Enable a variety of connected sensors to monitor metrics:
  • Pressure
  • Vibration
  • Temperature
  • Humidity
  • Switches
  • Voltage
Digitization Optimization

• Detect problems in equipment:
  • Openings
  • Leaks
  • Battery levels
  • Current
  • Tilt
  • Flooding

• Data flow combined with real-time dashboards, makes predictive maintenance a reality
Collaboratively Utilizing IoT

- Rechargeable beacon devices send out real-time location information
- Receivers, monitors, and routers consolidate and route data to cloud-based software services
- Apply business rules to real-time monitoring and reporting
Let’s explore a real-life scenario in which an innovative, supply chain management system, Fellow WatchDog, solves common supply chain problems.
Our solution places IoT beacons and tracking units in the warehouses, trailers, and receiving areas of its stores, facilities, and factories.
Real World Example - Mapping
Real World Example – Mapping RFID Micro location
Real World Example

Fellow DogTags are added to each transport pallet or item and linked to each unique pallet
Real World Example

#0259 Outbound
1460 Koll Circle
San Jose, CA 95112

#0925 Outbound
NASA Research Park
20 S. Akron Rd. MS 20-1
Moffett Field, CA 94035

MHI
Real World Example

Fellow DogTags movements sensed by Fellow InFormant and are synced with the logistics system data using Fellow Fusion and its Machine Learning and alerting
Real World Example

Assets are loaded into the trailer, alerting geofence Fellow InFormant devices in the warehouse.
Real World Example

Other IoT Trailer-based and GPS enabled tractor send telemetries to cloud-based Fellow Fusion
Real World Example

Delivery of trailer is recognized by the geofence at the receiving store and pallets are checked accordingly.
Empty pallets are then tracked as they are returned to the warehouse for reuse and reassignment.
Real World Example

Value of this solution becomes apparent when things go wrong.
Fellow Fusion sends auditable action alerts to:

- SMS device or email
- Or task management systems
Real World Example

Dashboards built in Microsoft Power BI show trends, alerts, paths, and assets presently shown by location.
Real World Examples - Dashboards

Immediately track product action and other telematics in software applications
Real World Examples - Dashboards
Real World Examples - Dashboards

Empty spots on shelves whose inventory is in store

1748

Number of empty spots in a month
The Case for Machine Learning

• Too much data for humans to understand quickly

• Patterns are hard to discern - Merchants and operators want to work on their business, not analyze data

• Outside data sources – weather supply feeds and enterprise systems need to be integrated

• Speed is necessary for prevention of problems
Questions?
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