



Automated fault detection in the IoT

by Charles Burnham, Dexda CTO

Dexda is cloud-based machine learning solution to automate fault management for the Internet of Things (IoT) - increasing device availability and reducing outage times. Dexda manages and makes sense of the health and status data generated by IoT devices, removing the need for business to build and operate complex and costly monitoring solutions and instead focus on using their device data for growth.

‘CIOs will be expected to own, respond to and resolve the waves of new and unanticipated demands, considerations and issues that the IoT will generate on a daily basis.’ Gartner Research

The data advantage

From smart cities, to autonomous vehicles, to connected appliances; technology is providing the launchpad for business to invent new and improved services whilst simultaneously driving down costs. Practically every industry is beginning to realise the potential of smart devices - the so-called Internet of Things.

Extracting value from the wealth of data generated by IoT devices is now essential in order for businesses to gain competitive advantage and meet their customers' expectations of always-on technology. The primary link between brands and their consumers is now the data generated by their devices; an uninterrupted and intelligent service matters in business, now more than ever.

‘The IoT will expand rapidly and extensively, continually surfacing novel and unforeseen opportunities and threats.’ Gartner Research

Edge control

The basic output of IoT devices is data, all of which has to be reliably and securely collected. Dexda's IoT gateways serve as a single, secure connection point between the Dexda cloud and your smart devices. These gateways support both passive and active data ingestion using a variety of protocols and interfaces. The software gateway is built upon open source technology and can be easily extended to support new and legacy protocols, providing the widest possible device support.

Dexda's gateways perform data normalisation and enrichment at the edge; transforming raw device data into a semi-structured form that enables machine learning modelling and stream-based execution to be independent of source data formats. By applying transformation rules at the edge, Dexda prevents the creation of a centralised 'data soup', from which extracting useful information requires tacit knowledge and expensive post-processing.

‘We expect to see 20 billion internet-connected things by 2020.’ Gartner Research



Business context

In addition to edge enrichment, the Dexda solution provides a number of hosted integrations that enrich the streaming data delivered to the Dexda cloud. From weather feeds to asset information to IT Service Management data, Dexda is able to add additional context to the streaming events via a range of centrally managed integrations.

Dexda’s data enrichment serves two key purposes.

1. It provides contextual information for powerful searching and building dashboards
2. It provides dimensions for seasonal and feature detection algorithms. For example:
 - Adding weather related features to a seasonal activity model for cycle hire activity.
 - Identifying uncommon data volumes for a particular device type running a problematic software version.

Prevention rather than cure

Dexda’s machine learning algorithms are designed to process and make sense of textural information in log and event/alert data. Dexda decodes and maps the complex relationships in the device data and uses this knowledge to raise predictive insights in real time as issues develop. Dexda’s predictive insights provide valuable opportunities for businesses to carry out preventative maintenance ahead of an outage.

Dynamic triage

With so much data being processed, how does Dexda identify the most significant issues? Dexda’s machine learning applications all contribute to an insight importance score. By focussing on anomaly (unusualness, sentiment, features, time to failure) as well as business context, Dexda is able to identify the needle in the haystack, all with a single importance score. Contrast this dynamic approach to threshold-based monitoring, where all breaches are treated equally...

In addition to identifying highly unusual anomalies, Dexda’s dynamic importance scoring provides a mechanism to filter out valueless events and to only report the significant issues as they occur.

Will Dexda work for me?

Dexda uses a model-based approach to machine learning. Its automated Model Builder creates machine learning models that are trained on your data and therefore tailored to your business. The Model Builder APIs provide the opportunity for you to further customise the model and overlay your business knowledge.

Machine learning models are dynamically loaded into the real-time pipeline where they process the streaming data sent from the Dexda IoT gateways, turning the thousands of events into a far smaller set of automatically triaged insights.

Dexda’s capabilities are not limited solely to smart device fault management. Dexda will ingest and correlate events from both front and back-office technologies, providing a joined-up picture of an issue’s cause and effect.

Turn data into your advantage

Dexda’s automated fault management enables you to keep your devices up for longer, ensuring your business operates efficiently and your customers experience fewer interruptions. With Dexda in control, you can return your focus to the strategic use of data for business generation.

To find out more, contact us at:
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