

Artificial Intelligence

in Action:

Business Problems and Intelligent Solutions

Case Study: Spark

June 2019

TOWARDS OUR INTELLIGENT FUTURE TE ARA MŌ TĀTOU ATAMAI O ĀPŌPŌ

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AI Forum of New Zealand Case Study

Artificial Intelligence in Action: Business Problems and Intelligent Solutions

Meredith Jeory

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CASE STUDY: AI IN TELECOMMUNICATIONS

The telecommunications industry uses data analysis widely to streamline operations, design and implement business strategies, and build effective marketing campaigns. Telcos hold mega sets of useful data. The amount of data is growing exponentially. As a result, old data analysis techniques and methods are no longer efficient; more organizations are turning to AI solutions.

There are many uses of AI and analytics applications in the Telco industry, including:

- **Customer segmentation.** Segment the market and target content according to each group.
- **Customer churn prevention.** Keeping the customer engaged, analysing data to immediately address satisfaction issues.
- **Lifetime value prediction.** Measure, manage, and predict the customer lifetime value (modeled on customer purchasing behaviour, activity, services used, average customer value).
- **Recommendation engines.** Making predictions of customers' future product of service needs.
- **Customer sentiment analysis.** Analysing data to assess positive or negative customer reactions to a service or product.

Organisations need to improve their readiness to adopt AI if they want to take advantage of these applications. Organisations' leadership need to make AI a core part of their strategy and develop an agile learning culture.

SPARK TRANSFORMATION

Spark has recently transformed its entire organisational structure to Agile Methodology, moving away from the traditional, hierarchical structure found in most organisations. This shift enables Spark to iterate and go-to-market at a faster pace, and operate more leanly.

Spark followed a three-pronged strategy to implement AI and Automation at scale:

- Robotic Process automation - for automating repetitive use cases
- Cognitive AI - for pattern detection and unsupervised learning like retention and segmentation models

- Conversational AI using NLP - to communicate and understand context e.g. Chat bot and Email automation

The telco recognises that these focus areas are not necessarily new; other organisations have taken similar approaches. However, Spark began to implement AI with an interesting approach. It started with building a core foundation which resulted in an information architecture which is used to develop core AI technology with an iterative agile methodology. Spark then takes it out to the edge, taking the technology ideas out to areas where it will be applied e.g. marketing, customer experience, network teams

WHY AI?

In the past, Spark used a lot of data analysis and other manual methods to understand its customers. The opportunity is the vast amounts of customer data telcos hold however with all those different data sources, and the large volumes of records within each data set, it becomes unmanageable to look at every attribute of every customer just by using data analysis to identify patterns and take action. This is where the machine learning comes in. With machine learning Spark can understand customers better so we can reach out to them in more meaningful ways.

AI EXPERIENCE

Spark wanted to utilize AI to solve business problems. Instead of having small teams of data scientists working on a proof of concept Spark applied a use case driven approach to develop AI based solutions to solve a business problem.

This use case driven approach needed a combination of business analytics skills, deep data analysis skills and machine learning expertise working together in an agile, collaborative team.

Spark had capability in business analytics and deep data analytics and leveraged Qrious and external partners for providing and developing the machine learning capability in the team

As Spark's develops more AI solutions, it provides an opportunity for internal teams in Spark to have real life experience on developing AI and creates a virtuous cycle of developing AI talent pool inside the organisation

Use case: Customer Intelligence using Data

Spark focussed on AI to deliver business value in 3 key areas which focused on the customer:

- Gain Customer Intelligence
- Create Frictionless Experience
- Implement data driven decision making

Spark has shifted its thinking from data being a support system to data being an enabler. The data itself provides the views on what is happening and why it is happening and then machine learning models provide insights which are then acted upon using automation techniques.

One of the examples of using advanced AI is the churn model built at Spark to address customer retention. An end-to-end machine learning churn prediction model was built along with a tracking methodology that predicts which customers are likely to churn and automatically tracks which campaigns will be more effective in retaining the customers at risk of leaving Spark. This AI solution is **automated with minimal human touch** across the data engineering, modelling, campaign creation and tracking lifecycle on a daily basis. The solution consists of machine learning models enabled with a simple interactive dashboard to understand the context, check the accuracy of the model and track the benefits using a live dashboard.

Often the growth or retention initiatives are applied across broad customer segments. However, Spark wants to understand customers better by segmenting them into smaller groups using data and machine learning algorithms. This way, Spark can get to know who they are, their likes and dislikes and how to have better conversations with them. This reduces bias and stereotyping of human generated segmentation.

For example, based on the churn likelihood prediction made by the AI solution, Spark released specific campaigns to the market, and measured how many customers were saved. The campaigns were by 30-40% more effective than earlier.

Spark has found that once it has a template AI solution it can re-use the solution to solve other business problems. For example, its fibre bot (which processes fibre connection orders) can be tweaked for other product types. In another example, Spark tweaked a machine learning model for fibre customer segmentation to segment the entire customer base. The reusability of the AI solutions gets easier as the team get more confident with solving problems.

BUY VS BUILD

Spark uses plug'n'play AI models where it is appropriate, typically for generic solutions. For example, chatbots or digital assistants. However, Spark uses its own capability and resources to create models and solutions for complex problems, specific to Spark's products and services. The telco says it holds the view of a complementary relationship between buy vs build rather than a systemic "one or the other" approach.

LEARNINGS

Spark had many challenges to overcome when starting its foray into using AI to solve business problems:

- **Getting Started and building case for change-** Discovery for finding the right opportunity to apply AI may take time. Instead of started on broad variety of use cases the recommendation is to start small for specific problems and scale thereafter
- **Finding people who could understand both data and business.** It may be difficult to find such candidates in a market like us, spark leveraged data skills of Qrious and also developed people in the role.
- **Human Machine Collaboration.** The interface with humans and learning algorithms need to be through so that there is clarity in the roles. Spark provided names for the algorithms/BOTs and given them role descriptions to enable better human machine interface
- **Scaling up is hard.** Spark found it could be difficult to productionise and scale Proof-of-concepts. Now Spark considers how to solve scale and production issues which the team is running a POC and using learning from Dev/ops technique to automate them.

WHAT THE FUTURE HOLDS

The company recognises that value AI based solutions bring, particularly around its increased understanding of customer behaviour which will transform the way spark's engages with NZ consumers

Some key areas of focus are:

- Journeys – Understand journeys and predict failures in journeys
- Linking customer experience and capacity management especially in networks
- Getting better in the process of delivery of AI

Spark believes that there is a huge potential in AI and even leading out in use of AI, there is enormous untapped potential for AI to use for improving customer experience, growth and reduce cost to operate more efficiently.

Competitive pressures will push many organisations to invest in AI in the shorter term. In the long term AI will be critical for businesses to reduce cost and operate more efficiently.

Spark recommends to "Start now when it's more of a choice in the short term, in the long term it will become a necessity".



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IDC New Zealand, Level 11, 203 Queen Street, Auckland, New Zealand. Ph +64 9 377 0370
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The rapid development of AI technologies presents major opportunities and challenges for our country: from creating world leading AI businesses, nurturing a pool of talented AI engineers, applying AI technologies to our agriculture, government, manufacturing and service industries to holding a meaningful national debate on the broader implications for society, New Zealand needs to actively engage with AI now in order to secure our future prosperity.

The Forum brings together citizens, business, academia and the government connecting, promoting and advancing the AI ecosystem to help ensure a prosperous New Zealand.

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AI Forum of New Zealand
L1 Building C, 14-22 Triton Drive, Auckland 0632, New Zealand
Ph +64 9 394 7693
www.aiforum.org.nz