### Google Cloud



### 5 practical steps to ML/AI leading business transformation

Machine Learning (ML) and Artificial intelligence (Ai) will revolutionize the way we work, live, play and enjoy life even more than the internet revolution we experienced less than two decades ago.



- Have you seen statements like this all over the internet, social media and basically everywhere?
- Are you struggling to find real world examples of how ML and Ai are implemented in real businesses, to drive real business impact?
- Are you looking for a framework to help you navigate how ML and AI will help drive business results?

### Setting the scene: What's the revolution?

Over the last half a century, computers have meant three basic things: **compute, store** and **connect.** During the mainframe era compute was expensive and only large enterprises owned them. Once storage became cheaper, the PC was born. This created a need to connect all these computers together, and hence the internet was born. About 20 years ago, when I first landed in Silicon Valley and started my career at Cisco, the internet was considered the biggest revolution in the technology world.

The internet is the basic ability to connect one computer to another, but many businesses at the start didn't necessarily have the vision to see the transformation, the complete paradigm shift that the internet would bring. Imagine the questions they were asking 20 years back: how is connecting two computers going to drive value? I suppose it will make things faster, but will it have a real impact on my business? When should I be thinking about it? Will it affect one department? Or more? How and why will it be disruptive?

Several decades later, we look back and see how the internet disrupted... everything. Not only has it transformed the way we connect and share, increasing productivity, but it has paved the way for entire industries (think ecommerce). It has destroyed job roles and created new ones. The internet has redefined business models, customer interaction, value generation and more.

## ML and Ai will drive a new, bigger revolution

Technology has opened the door for better data capture and analytics. The past decade has been all about **"knowing your data and making data centric decisions"**, but in our technological journey, as humans, we have kept one thing for ourselves - **"decision making"**. While we want more and more data in front of us, the fundamental decision making - making judgement calls - has been firmly in the domain of humans.

With ML and Ai, we are about to cede that control to machines for the most part. Machine Learning and Artificial Intelligence are all about **"letting machines make better decisions for us"**.



What do we mean by better decisions? With Cloud, it's possible to ingest, digest, and analyze massive amounts of data at scale. ML takes all that data - more data than humans could possibly begin to process - and makes predictions, acts and learns from it. Also, it does it a lot faster than humans ever could. What's more, ML models with machines aren't burdened by human bias or bandwidth. They can make logical and sensible decisions, quickly.

All of this is possible, and it isn't magic. Though it's easy to view ML and Ai as a kind of science fiction, this is happening today, in the real world. At its simplest, ML is very sophisticated, very powerful math that can deliver real business impact.

Over the last 5 years, we at Pluto7 have helped businesses large and small, Fortune 500 through startups, from all over the globe, to leverage ML/Ai to achieve meaningful business impact. We have spent several years exploring various public cloud platforms for data sciences and finally settled on Google Cloud. As a services partner, we want our customers to achieve the best results, fast, and at lower costs.

As soon as we understood GCP's deep integration - from data pipelines, to storage, to ML modeling capabilities - and the significant reduction in development time, it was a no-brainer. GCP foundationally was designed for machine learning and Ai on a proven platform and is used internally by Google - e.g. Search, Gmail.

In our experience, businesses who are looking to utilize ML/Ai sit on a broad spectrum: some are seeking transformation; some a competitive advantage; some simply want to survive in their industry.

Over the years, as we have helped customers large and small, all along this spectrum, experience meaningful business impact, we have developed a proven methodology. The following five steps provide a framework for business leaders to navigate this new paradigm.



### Identify valuable decisions that ML can actually make



The starting point is to figure out the decision-making areas where ML/Ai delivers value, and also where it doesn't. This starts with assessing the business value versus the complexity of creating and managing the ML model, and the time it takes to build and deploy these models.

Another key factor - especially in the beginning - is the ability to communicate the value. You want to be able to clearly breakdown the business problem and the corresponding ML models to make sense to non-technical audiences, so that your change management is eventually easier. In simple terms, take a problem where the ROI is obvious and explainable.

#### **Real life example:**

Pluto7 served a healthcare customer who wanted to leverage ML/Ai to "help their patients to be treated better." This, of course, could mean many things. By engaging us as part of the innovation efforts, we were able to help them think strategically about where ML could impact their business and their customers. We not only identified multiple areas where businesses processes could be significantly improved leading to better healthcare for their members, but also, we also explored wider possibilities. Specifically, we showcased how ML could be used to flag when patients are trending towards a chronic disease well before doctors could possibly detect the concern. We also showcased how radiology image readings lead to more accurate results when compared to humans. This customer's COO acknowledged that ML and Ai is a journey and not a one-time project.



# **2** Clearly identify how you can economically feed data to the ML model

Once you know the decision where ML/Ai can deliver value, you need to ensure that you can economically centralize the relevant labeled data (sample data or training data). This is partly so you have enough data to get started but, more importantly, so that your ML model can continuously learn. There is no hard-and-fast rule on the size of data but, generally speaking, the more data the better. We have a variety of Enterprise customers who have hundreds of terabytes of data, as well as SMB customers who have less than a million rows of data.

#### Real life example:

The largest networking equipment manufacturing company in the world engaged us to help them centralize their marketing data and installed base data. Working in Google Bigquery serverless data warehouse, this company eradicated their manual processes and implemented an ML model, leading to results in minutes rather than weeks. The customer's Digital Marketing Head acknowledged that it would have been impossible to correlate internal and external data - which crosses over 50M+ rows in each data sets and 100TB of data - to actively mine ever day without Cloud and ML.

## **3** See ML/Ai as innovation, not sci-fi

Don't be part of the common misconception that views ML and Ai as the niche passion project of a handful of technology enthusiasts. If you approach ML as a one-off technology project you will never unlock its true potential, and fail to see any positive business impact. ML and Ai model building should be seen as part of your core business problem-solving effort, both in objective and development. The most successful initiatives we've seen have been with businesses who started by viewing ML as a unique opportunity to innovate, connecting holistic thought process, covering policy, systems integration, data and change management.

#### **Real life example:**

One of the world's largest brewing companies wanted to improve the accuracy of when filters needed to be changed in the brewing process. This not only would lead to efficiencies and cost savings, but also improve the taste of their beer. By building an ML model that was well integrated into the manufacturing process, with methodical change management as well as integration to SAP ERP system, this project delivered significant ROI. As quoted by such customers' CFO, "this not only provided savings of millions of dollars, but also resulted in improving the taste of beer".



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## **4** Blend your business know-how into the model design

ML is no different than any other business intelligence project in that the quality of the output relies on the quality of the input and design. Garbage data in means garbage results. So it's critical that you use your domain knowledge - your understanding of your business and your core content - to help think through the model. You will hear a term called feature engineering. Simply put, it is applying your business know-how in data analysis before you run the model.

#### Real life example:

For a large software company we had to apply know-how to recommend which of their potential customers do not appear as high value customers today but eventually will be. These customers were called "diamond in the rough". The Sales Head at the customer site acknowledged that they "never" would have found this otherwise.

# **5** De-mystify the magic to others in the company

Once you understand and can demonstrate the value of ML, the most important part is broadening out that value across your organisation. This is, fundamentally, a change management process. Once you have built a successful ML model, the real challenge is convincing the stakeholders to adopt and make it part of the daily job, and to trust the decision the ML model makes.

#### **Real life example:**

One of our clients is a large multi-billion dollar semiconductor business that makes sensors for smartphones. Business is cyclical, and they depend on external data for forecasting analysis. Historically, they achieved 70% accuracy in demand forecasting, and considered that normal. We raised the forecast accuracy to 92% for most products, beating the forecast accuracy KPI by 22%+. Despite the success, the internal change management process lagged. Even though the CEO's buy-in was secure, the Sales team struggled to get on board, leading to a year-long delay in adoption.







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You may have noticed that in this framework, I have not focused on the ML model building itself, deep learning models the neural networks, etc. Trust me, there are a lot of passionate people in your enterprise who are learning and researching this, and who will do a phenomenal job.

Your employees may need a bit of a push, but chances are they will dive in as a way of developing their own careers. In our experience, the model building is the easy part for the majority of business use cases. The bigger challenge is getting management on board with such innovation.

### Where do you go from here?

Should you invest in ML/AI now or later? What is the impact of not doing anything? The answers to these questions really depend on the industry and vertical that you are in. The insurance industry is, for example, miles ahead of the curve on this. The retail industry is undergoing a transformation now through online retailers. If you're in healthcare, absolutely, you must be worried about it today, because your competition probably is. If you are in certain government sectors, you may be held back by compliance and regulations, and so you are waiting to assess the success in the commercial sector.

ML and Ai adoption will happen across industries, domains and verticals, and will become ubiquitous. Just like the internet, there is no stopping this train. You only need to figure out when and where you get on to this journey.

By the way, there is no destination in this journey. Think about it.





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