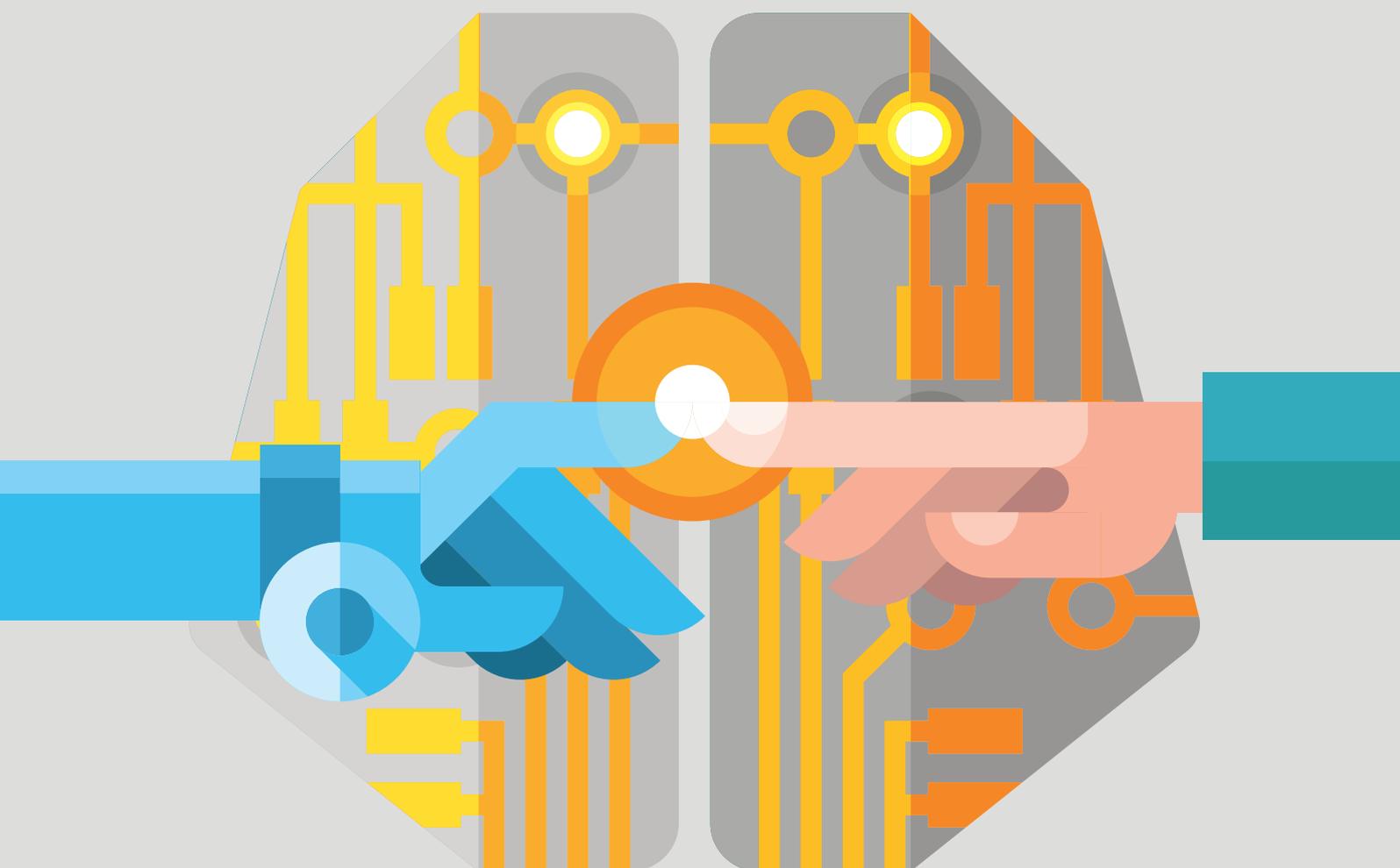# THE ACCOUNTANT'S GUIDE TO AI

STANDING ON THE SHOULDERS OF ROBOTS

receipt bank

INTRODUCTION

Artificial intelligence (AI) – the creation of human-like intelligence within computer systems – is no longer a theoretical, futuristic concept. AI is here and beginning to make inroads into every avenue of human work, experience and play – and accountancy is no exception.

In this guide, we'll give you a foundational explanation of AI, how it's evolving and the potential benefits and challenges it will bring to the accounting industry.
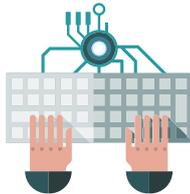
THE NEW CHALLENGES OF AI:

AI technology is at the early stages of development within accounting applications – so it's still evolving and becoming fully realised.

AI's superior data-processing capabilities will eventually replace some financial admin roles, over time.

How the division of accounting work between humans and AI will be made is unclear – but there's potential for accountants to harness the power of AI.

THE NEW OPPORTUNITIES OF AI:

AI's ability to process huge amounts of data surpasses that of any human.

The hard work and inefficiency can be taken out of process-heavy bookkeeping, data entry and pattern analysis.

Accountants can harness AI's superior data power to deliver accounting services that are fast, cost-effective and invisible to the client.

With less process-driven work to do, there's more time for valuable customer-facing advisory work and relationship building with business owners.

1. WHAT'S ARTIFICIAL INTELLIGENCE?
HOW AI IS CHANGING OUR WORLD

> " *The potential benefits of creating intelligence are huge. Every aspect of our lives will be transformed. In short, success in creating AI could be the biggest event in the history of our civilisation.*
>
> **Stephen Hawking**
> Theoretical Physicist, Cosmologist and Author

A BRIEF HISTORY OF ARTIFICIAL INTELLIGENCE

Creating artificial intelligence (AI) within a system is not a new idea. The roots of the concept go as far back as ancient Greek philosophy, but the true history of artificial intelligence as we know it goes hand in hand with the emergence of computers and computing systems.

The work of pioneers in the 1940s and 50s, such as Alan Turing and John McCarthy, allowed us to see that computers – with the right programming and instruction – could perform basic data-processing tasks, such as the infamous decoding of German wartime codes. As digital computer systems gradually became a reality, through the 60s and 70s onwards, the theoretical concept of artificial intelligence gradually began to become a reality. Computer science thrived from the 1990s and programs appeared which could carry out genuine data processing tasks. By the turn of the millennium we see the arrival of virtual reality and smart interactive devices. And, as we reach the present day, we finally see software applications of AI performing highly complex data processing and decision-making – the unloading of cargo in London Docklands, for example, is carried out by an automated robotic system, driven solely by AI.

WHAT IS... AI?

Artificial intelligence (AI) is the building and development of computer systems that can carry out tasks usually associated with human intelligence – 'thinking computers', in other words.

MILESTONES IN AI DEVELOPMENT

- **1940**
  Alan Turing's electro-magnetic 'Bombe' machine helps decode the Enigma code.

- **1943**
  Colossus, the world's first primitive programmable computer, is developed at Bletchley Park to crack the complex Lorenz cipher.

- **1956**
  John McCarthy, US computer scientist, develops the term 'artificial intelligence' to describe a thinking computer that can demonstrate intellectual and learned behaviour.

- **1958**
  McCarthy invents LISP, one of the very first programming languages.

- **1960s-1970s**
  Computer scientists as Stanford university and the Massachusetts Institute of Technology (MIT) continue to develop applications of AI that push computing ever-closer to delivering true intelligence.

- **1974-1980**
  The 'First AI Winter' slows down development of AI, due to limitations in the available computing technology and the withdrawal of research funding.

- **1981-1987**
  Kickstarted by funding from the Japanese government, investment and funding for AI gradually begins to reappear, allowing further development of AI systems.

- **1987-1993**
  The 'Second AI Winter' hits as big business becomes dissatisfied with progress of development and cuts the majority of economic investment.

- **1993-97**
  Processing power reaches a point where real leaps forward in AI can be made, including machine learning, data mining, virtual reality and fuzzy logic.

- **1997**
  A landmark for AI is met when the Deep Blue AI program beats chess champion Gary Kasparov – the first time a computer beat the human mind in a game of chess.

- **2000-2010**
  Computer science develops the concepts of deep learning, Big Data and artificial general intelligence – machines that can think in a very basic form.

- **2010-Present**
  Processors become more powerful and (critically) more mobile, allowing the creation of interactive smart devices and digital personal assistants, like Siri.

A CRITICAL TIPPING POINT FOR AI

We're now at a tipping point in history, where the technology and computing power at humanity's disposal can begin to realise the theoretic dreams of innovators like Turing and McCarthy. This 'Fourth Industrial Revolution' takes the world of digital and bridges the gap with the human mind – and as we apply intelligent computing in ever more practical ways, we're also learning where AI's strengths and weaknesses lie.

THE STRENGTHS:

Kings of data
AI-driven systems can process data at a speed and volume that far exceeds any individual human's capabilities.

Consistent follower of rules
AI processes data consistently and accurately, with none of the potential errors that human interaction introduces.

Machine learning
An AI-driven system can learn from experience, and has access to Big Data, meaning it has the potential to develop without direct human involvement.

An eye for patterns
By processing huge amounts of data, uniformly applying a set of predefined rules and learning from experience, AI can spot patterns, trends and anomalies at a speed and quality that goes beyond the capabilities of the human brain.

THE WEAKNESSES:

A lack of creativity
AI can crunch the numbers, but (at this point in time) it hasn't yet learnt to get truly creative and innovative in its thinking. It can learn processes and deliver data results, but not create a solution that resolves the issue highlighted by the data.

It's still inhuman
AI can respond to our voices, answers questions and retrieve data, but it can't (yet) build genuine human intellectual and emotional relationships. AI has yet to pass the famous Turing test experiment and make a claim for being truly sentient.

WHAT IS... MACHINE LEARNING?

Machine learning is a kind of AI where computer systems learn without being programmed, by referring to different data sources and applying experience to the actions it performs.

APPLICATIONS OF AI IN ACCOUNTING

Cloud technology changed the accounting world at root level over a decade ago now, and AI has the potential to bring about an even bigger evolution of the accounting and bookkeeping industries – through the practical application of intelligent systems and machine learning.

Accounting software no longer just does what it's told. With machine learning, algorithms can learn from experience and begin performing basic tasks that were once the sole preserve of human accountants. Even something as seemingly simple as the bank reconciliation process in your cloud accounting platform of choice is being transformed by intelligent algorithms. By learning what transactions come in, and which accounts they're habitually coded to, the software can complete the reconciliation process for you.

So, is AI a challenge to your abilities as an accountant? Or is AI an opportunity to streamline the basic elements of bookkeeping and free up time for you and your team to do the things humans are really good at – talking, listening, empathising and helping business owners find the best possible solutions to their problems?

The answer will lie in how the industry, as a whole, reacts to the influence of AI. With Big Four firm, KPMG, already announcing that IBM Watson cognitive technology will be part of their professional services offering, the time is ripe for evolution.

2. WHERE IS AI GOING?
THE IMPACT FOR ACCOUNTANTS

> "There's a lot of talk about whether AI could replace an accountant. But what I think AI could do is LEARN from an accountant. The machine learning angle is the more interesting thing for me, where AI could actually learn from what you're doing and could start spotting patterns.
>
> **Jonathan Gaunt**
> MD and founder, FD Works

HOW AI COULD BENEFIT ACCOUNTING

Accounting is an industry that's driven by data. This accumulation and saving of key business data is something that's driven the development of the current breed of cloud accounting platforms from major providers such as Xero, QuickBooks and Sage.

In the course of recording and processing a small business's finances for a year, an online accounting system builds up a huge amount of data – data that's tagged, tracked and coded, and a potential source of insight and learning for an AI-based accounting algorithm.

So how could the accounting industry apply this potential symbiosis of financial data and algorithm-powered process within their systems?

At the base level, there are two key opportunities for AI:

1. Keeping small businesses compliant and reducing their financial workload – AI has the potential to apply machine learning and rule-based logic to process a business's transactions, keep the relevant records, code the incoming revenue and outgoing spending and provide wholly accurate tax returns and accounts at year-end – providing a way for accountants and bookkeepers to offer a super-efficient accounting experience.

2. Bringing accountants Big Data results that drive value-add conversations – AI has equal potential to remove the time-consuming data-entry, processing and analysis carried out by accountants, allowing practitioners to receive error-free Big Data results and insights from their AI system – insights that will be the spur for client conversations, advisory work and higher-fee-generating value driven work for the client.

WHAT IS... BIG DATA?

Big Data refers to the processing and analysis of extremely large data by AI systems to find patterns, trends and anomalies at a speed and accuracy that no human can achieve.

HOW AI IS BEING DEVELOPED FOR ACCOUNTING

So how are these core attributes that AI can bring to the accounting table being put into action by the main cloud accounting providers?

On the whole, the key providers are reflecting the two main focuses of:

1. Improving overall accounting efficiency, and

2. Increasing the scope for value-add services.

With machine learning playing a critical role in much of the development, the main accounting platforms are looking to enhance the speed and accuracy of the process-driven elements of financial management – helping to create speedier and more accurate accounting services, while also freeing up time for practitioners to get their teeth into more customer-focused, value-led advice, guidance and business support.

Xero has put considerable effort into improving coding, with further development of its automated bank reconciliation processes and 'Find and code' function – and that's lead the company to start developing ways in which AI and machine learning could provide consistent coding of transactions, completely removing the need for corrections and recoding in any form.

It's this potential for consistency that's a core driver, as Xero's Head of Accounting, Paul Bulpitt outlines.

> *A lot of the machine learning work that Xero have been doing is already surfacing in the product. So something like the coding of invoices is being made easier. Research has shown that if you give humans a stack of invoices that they'll code the same transactions to three or four different account codes each time they process them. Conversely, an algorithm that's applying machine learning won't do that – it will consistently apply the transaction to the right code each time.*

It's the potential for accurate, consistent outputs that also make machine learning such a great tool for dealing with the imminent deadline for Making Tax Digital in the UK, as Gary Turner, Xero UK MD recently explained.

> *The work we are doing today to bring automation and machine learning to accounting and bookkeeping is not only a desirable extension to Xero. It's also part of a bigger picture. We believe the work will play an essential role in ensuring HMRC's Making Tax Digital project doesn't sink thousands of accountants and bookkeepers.*

Intuit have a clear focus on the small business market, using their QuickBooks product as a key platform for applying AI and machine learning to reducing the workload for finance teams. Vice President of Developer Group, Vinay Pai, has highlighted a focus on machine learning, explaining how Intuit is

> *Using machine learning to help identify the types of data, services and tools that a small business needs". This won't just benefit business owners, of course, with more accurate, timely bookkeeping providing a better source of data, analysis and insights for QuickBooks accounting partners too.*

Sage is expanding it's range of cloud products with automation a key function in these solutions, as Jacqueline de Rojas, Managing Director for UK & Ireland outlined at the start of the year.

> *Our new Sage solutions are built to support the mobile and automated way in which our customers want to run their businesses. They are designed to empower business builders to automate back-office functions, operate with mobility in mind and live in a world where there is virtually no finance admin. Busy business owners want 'invisible accounting'.*

WHAT IS... AN ALGORITHM

An algorithm is a set of rules within a computer program that allows the system to solve problems or carry out specific process-driven tasks

A BRIGHT FUTURE FOR ACCOUNTING?

So what does a future that can deliver AI-driven 'invisible accounting' look like for the accounting industry as a whole? If software and algorithms can do the low-level bookkeeping, tax and compliance work for small businesses, is there still a need to engage an accountant at all?

The challenge for accountancy lies in learning to see the potential for enhancing the accounting experience for clients – and using all the elements of data processing, machine learning and Big Data analysis to go beyond the basics towards a more advisory-driven service.

3. WHAT DOES AI MEAN FOR ME?

HOW HUMANS FIT INTO AN AI WORLD

> We have to get past the scaremongering of 'AI is going to replace my job?' and evolve to thinking 'Wow, how is AI going to augment the capabilities of humankind?'. That's when we can start thinking about how AI will augment the power of the accountant.
>
> **Paul Bulpitt**
> Head of Accounting, Xero and founder of The Wow Company

We've seen how AI and machine learning can replace the most basic accounting tasks, and provide superior analysis and data outputs for accountants to work with. But where does this leave the average accountant when AI becomes the norm?

What are the inherent challenges for AI as it evolves, and where do the human opportunities lie in this software-driven AI world? We spoke to Paul Bulpitt, Head of Accounting at Xero, and Jonathan Gaunt, MD of FD Works, to gauge their thoughts on the future of AI and accounting.

WHAT IS... THE TURING TEST?

The Turing test is a method for determining whether a computer system can think, and respond, like a human. A human 'interrogator' must ask questions of two hidden subjects, one a human and one a computer – and determine which is the real person, and which is the computer attempting to give human-like responses.

THE NEW CHALLENGES OF AI

1. AI TECHNOLOGY IS STILL EVOLVING

AI within accounting systems is still in its infancy, so there's a lot of development, enhancement and refining to do before we have a functioning accounting system that has AI as its bedrock.

As Jonathan Gaunt points out, the timescales and benefits are still unclear:

> I can see that AI is going to change our lives, but I just don't know HOW it's going to change our lives and how far off that change is. Is it 6 months off, 6 years off or 60 years off?.

2. AI WILL REPLACE SOME ROLES

When you look at the superior volume and accuracy of AI when it comes to data processing, it's obvious that some low-level bookkeeping roles **WILL** disappear.

The key to overcoming this challenge is to look beyond this and to think 'How can this person be utilised better in the firm?' rather than just replacing a data-entry person like-for-like with a software algorithm. We must look for ways to move humans higher up the chain, while AI takes care of the basic elements of getting the accounting work done.

Jon Gaunt is clear that we should embrace AI data capabilities:

> There are a lot of things we want to do with the accounting data, but it's about finding the time to analyse it. So machine learning could take away a lot of the time issue and do that data analysis for us.

3. THE ACCOUNTANT'S ROLE IS STILL UNCLEAR
The next generation of accountants may not have to get their hands dirty with the data entry, but this does leave the question of what the accountant's role will become in decades to come.

With the technical principles, application of accounting rules and coding of transactions all done by AI, where does a human accounting professional begin to add value to the whole accounting process – both for the client and the greater good of their firm?

For Paul Bulpitt, the answer leads in training new accountants in the basics, as well as the higher-level advisory work:

> *AI is going to be a case of evolution rather than revolution – I don't buy into the talk of massive job losses. It's got to evolve and develop, and that means training the next generation of accountants so they're ready for the challenge.*

THE NEW OPPORTUNITIES OF AI

1. A BETTER WAY TO PROCESS DATA
Rather than seeing AI's superior data capabilities as a threat to accountants, we've got to learn to utilise this ability and use it to aid the accounting service.

What AI will do is take away a huge amount of that process-driven work, and the issues related to it, away from accountants. And that frees up time to start looking at the advisory angle. As Paul Bulpitt confirms

> *That's probably where the most exciting aspects of AI lie: in augmenting the advisory-level work by taking large samples of data and looking for the insights.*

2. INVISIBLE ACCOUNTING CAN BE ACHIEVED
AI will deliver 'invisible accounting' by taking the hard work and inefficiency out of process-heavy bookkeeping, data entry and analysis – both for the business owner and the accountant.

But to deliver on this promise, Jonathan Gaunt believes there's work to be done:

> *The foundations of the accounting software have got to be perfect before we can really move to AI or you're just going to end up with a total mess. We'll get there, but it's going to take time and the world needs to become even more connected than it now is for AI to achieve its potential.*

3. SUPER-FAST ACCOUNTING SERVICES CAN BE DELIVERED
With AI doing the lion's share of the data processing and basic bookkeeping, accountants have an opportunity to grasp this efficiency and deliver super-fast, accurate and effective accounting.

With machine learning in place, the AI can actually make the whole accounting service far more effective, something Jonathan Gaunt is keen to see:

> *There's an element of the algorithm seeing and understanding what you, the human, has done and then asking 'Do you want me to do that again next time?' It's about it learning where to replicate and repeat the recurring stuff.*

4. VALUE-ADD SERVICES BECOME MORE COMMON
With AI taking care of the hard graft, there's more time for valuable customer-facing advisory work and building deeper working relationships with clients.

As Paul Bulpitt flags up, removing the basic elements will transform accounting:

> *What AI will do is take a huge amount of that process-driven work, and the issues related to it, away from accountants. And that frees up time to start looking at the advisory angle.*

In an AI world, business clients will expect more from their accountant – and these increased expectations will help to drive and evolve the industry, moving the emphasis from accounts and compliance to the wider business strategy and long-term goals of the business owner.

STANDING ON THE SHOULDERS OF ROBOTS?

How your firm reacts to and utilises AI technology is likely to determine the future path of your practice. So it's important to factor the main challenges and opportunities into your future planning and to put some serious consideration into where AI will fit within your business model.

The accountants and bookkeepers of this generation will have to make some key choices.

Some may see the potential power and automation of an AI-driven accounting system as a threat, with staff being data-crunched out of a job. But for those ready to embrace it, AI's speed, accuracy and consistency with data will be a key tool in the modern practice. Even moreso, it will give professionals more flexibility in the route to take with their firms.

Will you use AI as the bedrock of a super-efficient service that delivers the accounting basics to a wider portfolio of business clients? Or will you grasp the opportunity to enhance and augment your advisory work and reflect on this as a positive move for accountancy?

In the end, it's about appreciating the potential benefits that AI will bring; whether that's for an enhanced accounting service, or a more human kind of business advice.

The choice of whether to battle the robots, or to stand firmly on their shoulders and extend the vision and reach of your practice is yours.

Receipt Bank is the leading bookkeeping productivity tool, used by over 4000 accountants and bookkeepers worldwide.

Receipt Bank extracts the key information from your clients' bills, receipts and invoices, removing the need for manual data entry. Receipt Bank then allows you to publish this data directly to your chosen accounting software.

Our Account Managers help you grow your business in a partnership that goes beyond just software to advice on marketing, to process mapping, pricing and more.

- ⊘ Bookkeeping Analysis & Management
- ⊘ Automating Data Extraction & Coding
- ⊘ Line item extraction
- ⊘ Accuracy 98%+
- ⊘ Phone support + 24/7 email support
- ⊘ Boost functionality
- ⊘ While You Were Away workload manager
- ⊘ Xero match
- ⊘ Expense Reports
- ⊘ Co-branded 5-Star Client mobile app
- ⊘ World-class Integration with Xero, QuickBooks Online, Sage One, Twinfield, Kashflow, FreeAgent
- ⊘ Built-in foreign currency support
- ⊘ Project and Class management
- ⊘ Dedicated training platform and education resources
- ⊘ 5 Star reviews on Xero Community & QuickBoooks Apps.com
- ⊘ A Personal Cloud Consultant to help you grow your business

TO FIND OUT MORE, GET IN TOUCH WITH OUR TEAM TODAY.

REQUEST A CALL ›