To Artificial Intelligence In Real Estate

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Introduction

When confronted with artificial intelligence, most people are either excited by its potential or uncomfortable with — and perhaps even fearful of — the impact it could have on their livelihood.

If you're excited, we hope this guide will help you focus that excitement on what is possible now, and give you the framework to imagine a more intelligent future.

If you're fearful, this guide will grant you knowledge — and therefore power — in a changing world. Being uncomfortable is fine, but don't stay uncomfortable for too long, because at the pace and rate of change that Ai enables, it could be very difficult for you to catch up.

Where possible, we have used real-life examples throughout this guide of how this technology is being applied in real estate; whether through AiRE's Ai-powered Digital Employee, RiTA, or through other solutions such as Juwai.com's Butler 1 robot. We've also drawn on everyday applications of artificial intelligence that you'll almost certainly be familiar with, like Siri, Roomba and Gmail.

As this guide will demonstrate, technology has the ability to drive transformational change in the real estate industry — but it must be strategically adapted to support and enhance human functions, not to replace them at the expense of the service experience.

Your Guides to Ai in Real Estate

IAN CAMPBELL

Ian Campbell has over 15 years experience in the property industry and a proven track record of growth with some of the biggest brands in real estate.

Ian established AiRE in 2017 to push the boundaries of how technology is applied in the real estate industry.

He decided to embark on the ambitious task of developing the industry's first Digital Employee — and so RiTA was born. RiTA uses Ai and API integrations to automate common marketing, administration and prospecting activities, helping agents to be more profitable and productive.

SARAH BELL

Sarah Bell is an author, analyst, researcher, strategist, project designer and nerdtrepreneur. She has research interests in strategic planning, change management, professional development, and strategic applications of artificial intelligence at London's Middlesex University and MIT's Sloan and CSAIL Executive Schools.

With a decade of frontline experience as a real estate practitioner and agency owner, Sarah combines strategic insights with tactical knowledge and subject matter expertise to create business solutions that are intelligent by design and put customer experience first.
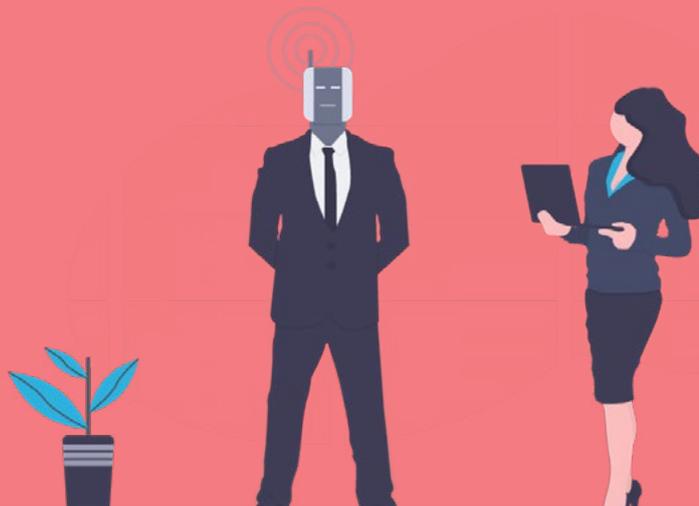
COLLECTIVE INTELLIGENCE

Will Real Estate Agents be Replaced by Robots?

There is a chance that robots will take over *parts* of your job, yes — but the end result might be that you have a much more interesting job.

Our approach at AiRE is one of 'collective intelligence' — connecting humans and computers to be more intelligent, together, delivering efficiencies and productivity that neither party could achieve on their own.

It's not just a matter of creating smart machines. It's about creating smarter agents and smarter agencies, and then connecting them so they can be more powerful than ever before.

Robot technology presents the opportunity for a better human future. The rise of robots means that routine and mundane work, like clicking on software, can be delegated to... well, other (intelligent) software, giving you the time and freedom to focus on higher-order, more dollar-productive work.

We're not just predicting a robot revolution when it comes to drudge work. We're helping to create one, because we see the potential for agents to break free from their screens and differentiate their service and their brands based on what makes them uniquely human.

SMARTER MACHINES, SMARTER AGENTS

The Intelligent Era

Author John Le Carre said, "A desk is a dangerous place from which to view the world."

This statement is particularly true for real estate agents — indeed, for anyone in the professional services industry. Our view is that technology should act in a supportive role for human connection, as opposed to disrupting it, allowing agents to spend less time at their desk and more time out doing what they do best.

Technology should be behind you, not in between you and your clients. An unintended consequence of digitisation has been the trade-off between efficiency and personalisation, but it doesn't have to be this way.

Ai applications can and should orchestrate human work to be 'smarter' via problem-solving platforms that optimise content, timing and service delivery from one human to another.

The Human Era	The Computing Era	The Intelligent Era
Human to Human	Human to Machine to Human	Machine to Human to Human
Organic relationship management and simple systems like index cards.	Digital tools and assets for relationship management with the goal to reach 'more' people.	Ai-powered machines to help focus human resources on better relationships and more opportunities.
Effective, difficult to achieve at scale.	Gained volume of relationships, but lost value of relationships.	The ability to maintain volume, with machine-assisted organisation of human work.
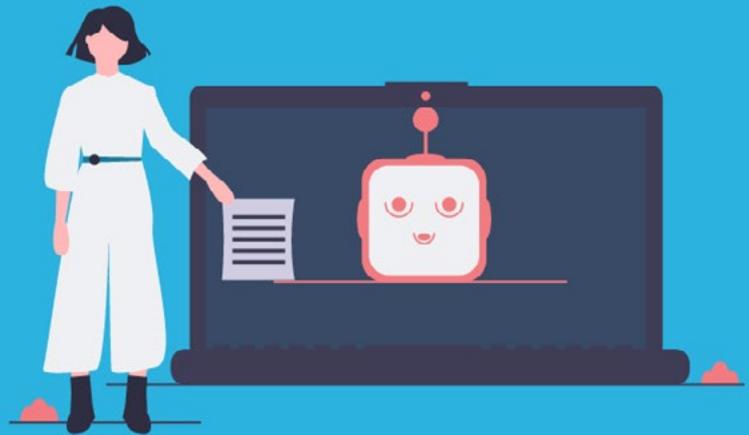
Ai is …

Artificial intelligence is simply a tool that we can use in our work, in the same way that factory workers might use machine muscle to help perform their job.

Unlike robots created for industrial manufacturing, the types of Ai that will be available for real estate agents involve 'knowledge work'.

Computers are able to process information at infinitely faster speeds and at greater volumes than human intelligence, so artificial intelligence can be a very powerful tool for knowledge workers like real estate agents.

Like all tools, a single application of artificial intelligence is designed to solve a particular problem. It's also constrained within the scope of the problem that it's trying to solve — after all, it's computer science, not magic.

The core mission of Ai is to solve problems. To do this, a computer requires access to very large amounts of structured data. It is only when operating within an incredibly precise system of rules that a machine can expertly calculate, analyse, predict or act in a way that simulates 'thinking'.

It isn't actually thinking in the same way that humans think — computers can only perceive and recognise. They can't cope with complexity. They can't factor in uncertain variables, like empathy, and they can't imagine scenarios where they have no data. That's why it's called *artificial* intelligence.

The Ai Toolkit

In creating machine solutions for intelligence, developers (also called engineers) use a variety of techniques.

The following pages outline some of the these techniques, as well as how they are already solving problems with examples you might be familiar with.

We also discuss use cases for these techniques in the real estate industry. This includes some of the work that AiRE's robot, RiTA, is doing, as well as work by some other robots, and our ideas about where else they could be applied.

SEARCH AND PLANNING

Used to mine vast amounts of data and analyse it to find the next right thing to do to achieve a goal.
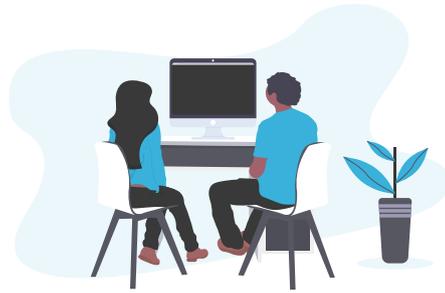
Breakthrough Moment
The computer program Deep Blue used search and planning to beat world chess champion Garry Kasparov in 1997.

Real Estate Application

RiTA, AiRE's Digital Employee, currently uses these techniques to deliver daily contact lists to agents, helping them connect with the best possible prospects on any given day based on the contact data in their CRM.

KNOWLEDGE REPRESENTATION AND REASONING

Used to process very large quantities of information, normally from multiple sources, and synthesising it in a way that can be more easily searched than through normal search and manual analysis.

Breakthrough Moment

IBM's Watson robot used this technique to beat *Jeopardy!* champions Brad Rutter and Ken Jennings in 2011. Watson now helps oncologists analyse early stage cancer cells for detection and diagnosis sooner and more accurately.

Real Estate Application

Combining CRM data and data from the marketplace, RiTA could make predictions to agents for appraisal leads based on relationship data, social information, listing activity and stock movement, as well as marketplace activity around an owned property.

MACHINE LEARNING

Enables machines to use feedback to make automatic improvements to their own systems.

Breakthrough Moment

In 2010, Siri was born in our iPhones. At first, Siri wasn't all that good at understanding us — particularly those of us who speak 'Strayan' — but now she is around 90 per cent accurate. That's because she has 'learned' how we use language, including nuance and slang, and she is able to detect what is being asked of her and then respond.

Real Estate Application

Ai could enhance the customer experience for buyers by learning their property requirements. A machine could learn how to 'match' properties rather than waiting for buyers to 'search', in the same way Amazon suggests books.

MULTI-AGENT SYSTEMS

The idea that 'helper robots', our digital doubles, could communicate with each other and achieve outcomes together, completely independently from the humans they serve.
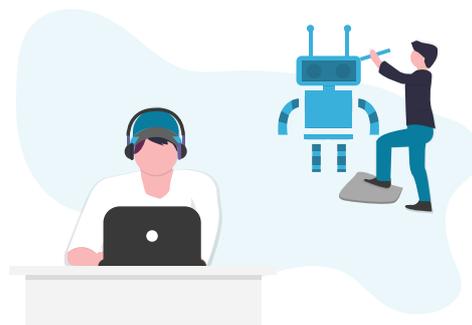

Breakthrough Moment

Google Duplex is an Ai voice that can phone restaurants and convincingly 'talk' to the human on the other end of the line to make reservations. But what if the receptionist was also a robot?

Real Estate Application

Personal Ai, like Siri or Google Assistant, can connect directly with Agent Ai, like RiTA, and organise appointments for viewings. Information could be passed in any language between the two digital agents. This information could be connected to data in the CRM to enable the agent to provide a hyper-personal and hyper-relevant experience at the open home.

ROBOTICS

Intelligent machines that spare space with humans in the physical world.

Breakthrough Moment

If you're still vacuuming your house yourself, you need to meet Roomba. It's an autonomous little vacuum cleaner that recognises spatial information and can navigate around your house (and does a decent job of cleaning it, too).

Real Estate Application

Butler 1 is a bilingual android — a robot built to resemble a human — used by Juwai.com to assist real estate agents at open homes in predominantly English-speaking countries to communicate with Mandarin-speaking buyers.

SOCIAL NETWORKING ANALYSIS

Identifies patterns of behaviour and events among groups and communities to provide early warning of events and potential threats.
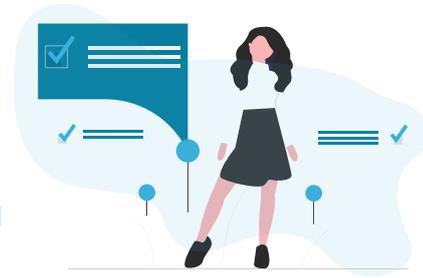
Breakthrough Moment

Event detection engine Banjo predicts global trends by indexing an aggregated and geotagged social media feed that its creators call 'the world feed'. The technology also has obvious defence and national security applications.

Real Estate Application

The 'God's eye view' of the world offered by social networking analysis could help construct predictive models for financial and property markets worldwide, as well as on a town-by-town basis.

NATURAL LANGUAGE PROCESSING

Computing designed to analyse and construct data made up of natural language (speech and text). This technology powers chatbots and automatic response tools.

Breakthrough Moment

If you have a Gmail account, you've probably noticed that you're not being bothered by the same amount of junk email as you were in the past.

Natural language processing (NLP) powers the incredibly accurate spam filter that operates in Google's G Suite to ensure your inbox is not bothered by ads, junk mail and phishing scams. By utilising NLP, Google claims it has successfully eradicated 99.9 per cent of spam.

Real Estate Application

RiTA uses NLP in a variety of ways. She can understand a range of specific requests from tenant or buyer enquiries and respond directly — and intelligently — to those questions.

NLP also drives some of RiTA's analytical capabilities. For example, she processes every note made in the CRM and can detect the difference between a low value touchpoint and a high value (human-to-human) touchpoint. By isolating the high value touchpoints, RiTA can report on how engaged agents are with their contacts, which is directly linked to listing opportunities.

NARROW, GENERAL AND SUPER INTELLIGENCE

The Roadmap for Ai

The successful applications of Ai to date are fairly narrow, in that they solve well-defined problems.

This is referred to as 'Narrow Ai' because it uses specific computing methods, or tools, to solve specific problems.

The hope of solving more complex problems exists as the field advances to a level of more human-like intelligence, referred to as 'General Ai', though the science is purely exploratory and experimental at this stage.

'Super Intelligence' is what people are referring to when they talk about computers gaining 'awareness' and creating their own agendas, independent of their human

programmers. While *The Terminator* was a great film (no comment on the more recent sequels), most scientists reject this possibility, because Ai can only work towards the ends of its programmers.

A knife in the hands of a murderer can harm, while the same knife in the hands of a doctor can heal. It is the human intent that matters, not the instrument of execution. In real estate, our view is that careful adoption of these technologies is required so that they are supportive, rather than disruptive.

All of the advancements in Ai to date come down to access to enormous amounts of data. Similarly, your success with Ai in real estate will come down to data — and, of course, how you choose to use it.

THE TURING TEST

An Intelligence Test For Ai

A lot of products claim to be 'smart', and using buzzwords like 'automation' and 'artificial intelligence' is a great way to generate hype in a world that is excited about the possibilities of technology.

However, there is an accepted test for machine 'intelligence'. It's called the Turing Test, named after its developer, mathematician Alan Turing (the subject of *The Imitation Game*).

Turing was instrumental in creating the computational machine, 'Christopher', that broke the German Enigma code in World War II, as well as the statistical modelling that was critical in the ultimate Allied victory.

Created in 1950, the basic premise of the Turing Test is that if a human can not tell whether they are communicating with a computer or a human for more than 30 per cent of a series of five-minute keyboard conversations, then the machine can be said to be 'intelligent'.

In 2014, a computer posing as a 13-year-old boy named 'Eugene Goostman' at an event organised by the University of Reading was reported to be the first to pass the Turing Test, though the claim has been greeted with skepticism.

Today, the ability of Google Duplex, Google's voice technology, to book a haircut over the phone — complete with human-sounding stammers and pauses — is a modern example of how a computer might seem 'intelligent' to a human.

Since its intelligence is restricted to the very narrow context of booking appointments, however, it could only pass for a human if the conversation took place within a tightly predefined context — but there is little doubt that the day when a voice assistant can truly pass the Turing Test is coming.

Data and Ai

LEARNING BY EXAMPLE

Ai, as a discipline, can essentially be boiled down to the principle that history repeats itself.

The big data that is used to teach robots how to predict outcomes is based on thousands — sometimes millions — of repetitions of the same task to identify what variables can influence the outcome.
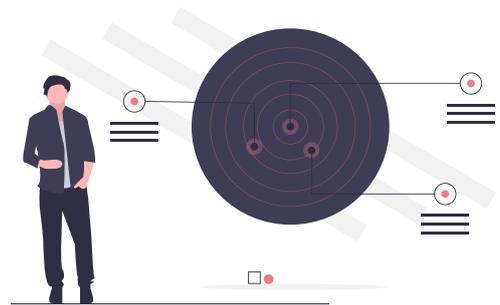
Data, at the most fundamental level, is recorded history — examples of what has happened before.

Machines have the computing power to calculate and analyse greater volumes of information than humans, and to learn from a greater number of examples. They are much better at processing data than humans could ever hope to be — and they are also better at learning from our mistakes than we are.

It Starts With Data

CONNECTIONS AND CONTACTS

Most real estate agents will have access to two types of data.

First party data is the data that exists within your CRM.

Third party data is the data that you purchase access to through things like advertising on real estate portals and sponsored ads to social media audiences.

The most valuable — and underrated — asset that exists in most real estate agencies is the first party data in their CRM.

Why? In Australia and New Zealand alone, AiRE estimates that the real estate industry has over 350 million contact records stored but not used properly, or at all.

When it comes to databases, size does matter — but engagement is key.

ROBOT-ASSISTED RELATIONSHIPS

Turning Data into Opportunity

In most databases, there is a total number of contacts, and then a 'real' number of contacts.

The 'real' number of contacts tends to be a refined community of property owners, or prospective property owners, for whom there is good data — an email address; phone number; last name; property addresses; and a service history through agent notes, recording personal engagement.

The total number of contacts in a database tends to be a combination of the 'real' number and then a mass of other records that have been orphaned, added automatically by third-party apps, duplicates, incomplete records and total mysteries.

If that sounds familiar, don't be alarmed — you're not alone.

RiTA uses natural language processing techniques to analyse human engagement touchpoints within a dataset. Across a sample of 500 agents, we have seen that an overwhelming proportion of contacts go without engagement or 'service'.

When RiTA's unique engagement analytics are applied to the property owner data segment of a typical agency database, we see that a large percentage of property owners are disengaged.

A contact becomes 'disengaged' if that person has not experienced a high-value relationship touchpoint from an agent in more than five months.

We visualise these disengaged contacts in terms of the 'Big Red' portion of the below graph on the left.

With a bit of education, some bulk data improvements, and RiTA-powered campaigns, we see the engagement segment beginning to widen, which means greater engagement with customers.

The increase in engagement — the 'Big Green' — and the consequential reduction in 'The Big Red' can be observed in the below graph on the right, taken 45 days after RiTA began her execution support.
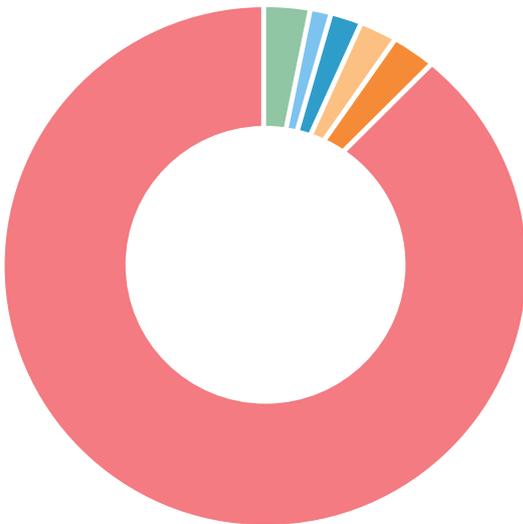
Property Owner Contacts:
Last Agent Notes - Aged by month

Property Owner Contacts:
Last Agent Notes - Aged by month

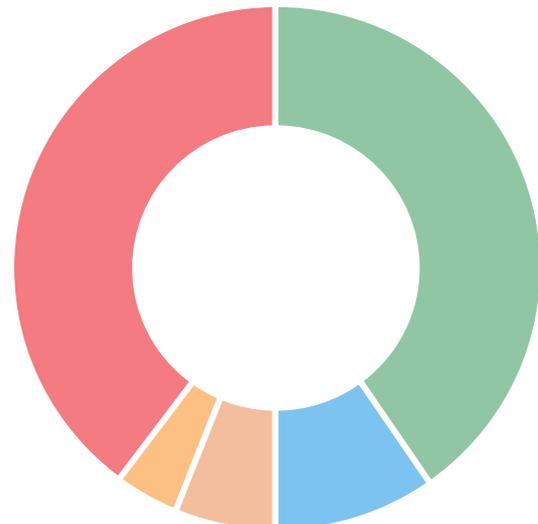**Figure 1.**

The Big Red = Bad.

Figure 2.

The Big Green = Good.

Beyond Chatbots

THE FUTURE OF Ai

The field of artificial intelligence holds incredible potential as a tool for agents to imagine and create a new industry that is customer-service obsessed.

Throughout this guide, we've provided numerous examples of what robots can do. But there are still plenty of things that they *can't* do, or at least can't do well — and that's where human agents, and human ingenuity, comes in to play.

Build relationships.

Show empathy.

Strategise and negotiate.

Be social.

Solve problems that haven't been solved before.

Tell stories.

Show emotion.

Quickly adapt to new circumstances.

Be funny.

Be positive and optimistic.

Nurture and encourage others.

Listen.

IMAGINE.

Robots You Should Know

LEARN MORE ABOUT THE ROBOTS AND Ai SOLUTIONS THAT WE HAVE DISCUSSED IN THIS GUIDE.

Meet Deep Blue, the chess-playing robot who beat world chess champion Garry Kasparov in 1997 via *The Conversation*

Meet Watson, the Jeopardy!-winning robot who now helps medical doctors diagnose early stage cancer cells via *Wired*

Meet Siri, the robot who lives in your iPhone, and discover how she learns via *Apple*

Meet Google Duplex, and watch an intelligent robot book a hair appointment over the phone via *The Verge*

Meet Roomba, the autonomous android that uses Ai to clean your house via *iRobot*

Meet Butler 1, the android that helps English-speaking real estate agents communicate with Mandarin-speaking guests at open homes via *News.com.au*

Meet GSuite Spam Filter, the Ai that saves your Gmail inbox from over 90 per cent of the spam that is sent to it via *CS Monitor*

Meet Banjo, the robot with a 'God's eye view' of the world via *Inc*

Want to really nerd out?

HERE'S A LIST OF ARTICLES AND SITES TO VISIT TO LEARN EVEN MORE ABOUT THE FASCINATING POSSIBILITIES OF Ai.

100 Year Study of Artificial Intelligence via *Stanford University*

A Beginner's Guide to Machine Learning and Artificial Intelligence via *Medium*

Ai: 15 Moments in the Story of Artificial Intelligence via *BBC*

Alan Turing: Creator of Modern Computing via *BBC*

How Artificial Intelligence is Re-Imagining Work via *MIT Sloan*

The Moral Machine via *MIT Media Lab*

Reshaping Business with Artificial Intelligence via *MIT Sloan*

Why We Will Come to Rely on Robots: via *TED*