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Artificial Intelligence Innovation Report

2018

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Innovation Report 2018

Introduction

Over the past few years, deep learning has gone from an esoteric branch of AI, focusing on theory, to being so mainstream that even an actress from Twilight has published an academic paper on it. This rise of deep learning over traditional machine learning methods has also led to the creation of a host of new platforms designed to help businesses improve work and workflow.

The idea of creating a machine that can 'think' in a way similar to the human brain is as old as modern computing. In 1950, in his seminal paper 'Computing Machinery and Intelligence', computing pioneer Alan Turing laid out several criteria to assess whether a machine could be said intelligent, which has since become known as the 'Turing test'. Thirty-six years later, computer scientist and cognitive psychologist Geoff Hinton demonstrated how an artificial neural network with several layers could be trained to learn nonlinear functions. In this model, each succeeding layer in the network 'learns' from the previous layer. In 2006, Hinton devised a way to train similar networks to pass along only information related to specified parameters, adding and training new layers until a deep neural network was created.

But it was the more recent appearance of large, high-quality labelled datasets, distributed computing and the applications of graphics processing unit (GPU) computing which has powered the recent, rapid advancement of deep learning. It is now possible to create deep learning neural networks which operate fast enough and accurately enough to have practical, real-world uses. Because of this, we are experiencing a paradigm shift in computing, an AI boom in which companies are spending billions to develop deep learning AI technology. Springwise has been following this shift since its beginning, and we have continually highlighted businesses at the forefront of the deep learning revolution.

At Springwise, we have found that, while there are a huge number of businesses that could benefit from deep learning, in general, for deep learning to offer a practical business solution, a company must have a need for finding complex relationships in large amounts of data, and a recurring need for predicting things that either cut costs or create value. Some of the most relevant deep learning-powered business transformations we have found involve improved targeting of sales and marketing, better informed decision-making, increased productivity and automation of retail.

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Targeted sales and marketing

AI modelling and simulation techniques are already being used to help drive sales in a number of ways. Platforms providing real-time data gathering, forecasting, and trend analysis can offer greater insight into buyer behaviour. Artificial intelligence used in conjunction with CRM systems can automate functions such as contact management, data recording and analyses, and lead ranking, while AI-enabled buyer modelling can provide a prediction of a customer's lifetime value. Recommendation systems are also used to learn content preferences and push content that fit those preferences, allowing more targeted sales.

While sales may appear to be primarily about relationships, in reality it is one of the most data driven areas of business. From names and contact numbers, to information on customer behaviour and purchasing, sales depends on the ability to find and identify the best sales leads, and the leads most likely to be converted. Traditionally, this information was collected by individual salespeople, but deep learning has allowed AI software to take over the time-consuming task of identifying contact information and lead scoring. Start-up Radius has spent years building a network-effect-driven data source called The Network of Record. The Network is built using data collected from more than 1 billion anonymized and aggregated business interactions. This data is then analysed by Radius' AI software to provide intelligence to sales teams which can help them directly target only the most qualified sales prospects for any product.

Local pricing knowledge is a sales challenge faced by companies that operate in multiple markets around the world. Local businesses can adjust prices based on local knowledge, but this is more difficult for businesses that operate globally, or whose customers are primarily online. In online shops, businesses tend to offer the same prices to every visitor, adjusted for local currency – regardless of the competitiveness of their prices in different regions. While the sales team may be setting prices based on those of other online shops, customers may be comparing them to local alternatives the sales team may not even know about. Darwin Geo-Pricing has developed one solution to this, using a deep learning algorithm to retrieve the online shopper's location and combine this with data mining to adjust the prices each customer is offered. Darwin's machine learning system continuously performs exploratory pricing, offering different visitors higher or lower prices than others in the same location. By comparing the sales performance at different price levels, Darwin can determine the optimal price level to pitch at each customer.

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Another sales challenge is how to cut through the advertising noise and clutter most customers are faced with daily in order to deliver more personal and relevant content or products to each consumer. The Weather Company, which was purchased last year by IBM and rebranded as IBM Watson Advertising, is working to cut through this background ad ‘chatter’ with the first-ever consumer use of IBM Watson AI technology for advertising purposes. Watson Ads uses natural language processing and machine learning to listen, think and respond to consumers’ questions with personalized answers in real time. Each Watson ad is able to understand the consumer’s questions and respond in ways that sound like natural, human language. Consumers clicking on a Watson ad for, say, a Toyota Prius Prime, can then interact with the ad to receive individualized answers to questions about the brand, other Toyota brands and automobile shopping. The program can also steer the conversation in a natural way, similar to how real people interact.

Another approach to advertising made possible by machine learning algorithms is predictive advertising. Predictive advertising is a subset of predictive analytics, which uses machine learning to predict future outcomes based on behavioural patterns in historical data. In ad tech, predictive analytics is used to help businesses target audience segments based on behavioural signals, personalise ads to be more relevant to individual users, or optimise ad bids based on user data. There are a number of companies vying to develop platforms for predictive advertising, including Programmai, which uses AI to identify and target new prospects with ads based on what is already known about a company’s existing customers or visitors. The company’s software can notify a business of how likely someone is to make a purchase, calculate future lifetime value, and automate ad bidding strategy decisions – allowing companies to focus ads on where they will have the biggest impact.

A similar approach is taken by Indianapolis-based Demandjump, which uses analytics to help marketers decide where to place ads in order to take advantage of up-to-the-minute trends. Their artificial intelligence marketing platform, dubbed TrafficCloud, collects data on page views, and can link customer activity across devices in order to present a detailed analysis of traffic between sources. The company’s analytics can then pinpoint which sites have the greatest influence in a brand’s competitive area, and which sites can help drive the highest number of customers to the brand. DemandJump’s proprietary algorithms use machine learning, graph theory, algebraic topology, and natural language processing, to “map each client’s entire digital ecosystem” and show marketers exactly what to do next to maximize revenue growth and stay ahead of market changes.

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Better decision making

Business decision making is a critical process, at all levels. Many business experts suggest that the future of AI in executive decision-making actually lies in a partnership, with humans defining the questions to be asked, or problems to be tackled, and having a final say on the best answer for their business, while AI is used to analyse large volumes of data to provide a basis for the decision. For an example of why humans will not disappear from the decision-making process, we need look no further than Uber. When the company's AI pricing algorithm doubled ride prices in London during a major terror attack in 2017, the company suffered from the resulting bad publicity and accusations of price gouging. The algorithm is better at setting prices in real time than humans, but a human would have been more likely to realise that doubling prices during a tragedy is not good business. This partnership approach can be seen in the development of a number of recent AI decision-making platforms.

In Denmark, start-up Corti has developed an AI platform that listens in to phone calls to emergency services to help detect signs of a heart attack, including signals in verbal communication, tone of voice and breathing patterns. Corti compares the data from each call against millions of previous emergency calls to find patterns indicating a possible heart attack. Corti can then alert the dispatcher to the possible need for an ambulance. This early recognition is important because the chance of survival decreases by around 10 percent for each minute treatment is delayed after a heart attack occurs, and because many heart attack symptoms, such as shoulder pain, can be easily dismissed as a minor ailment.

Partnership in decision making was also envisioned by the makers of VALCRI (Visual Analytics for sense making in Criminal Intelligence analysis), which is designed to aid the police and criminal investigators. The system is the result of an EU-wide research project involving more than 15 organisations - including law firms and behavioural scientists. VALCRI analyses criminal records and data sets related to social and legal systems to suggest possible areas of inquiry for detectives and criminologists, possibly reducing the footwork and human error involved in investigation. Because the AI algorithm learns more as more data is added, it can also help identify patterns that could help head off crimes before they are committed.

Deep learning has even penetrated the world of professional sport, allowing coaches to make better decisions based on AI-assisted analysis. Analysing a sports match involves tracking thousands of

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data points across hundreds of plays, and it is impossible for a coach to look at everything at once. At Springwise, we have highlighted how Australian innovator Flixsense is developing a platform, currently in Beta, which is able to track every aspect of football and cricket matches, such as passing patterns and ball tracking. Flixsense's AI learns to recognize people, action and objects from videos and can instantly identify key events from a match, helping coaches to anticipate what move the competing team will likely be making next.

Increased productivity

The ability of deep learning algorithms to rapidly analyse large amounts of data and identify patterns has the potential to reshape how businesses respond to operational challenges and inefficiencies. One of the ways in which AI is already leading to improved productivity is through automation of complex tasks that require physical adaptability and agility. This type of work is perhaps most commonly found in construction, which has always suffered from lagging productivity. One reason for this is that large projects involve many different sub-teams, each installing different components. It is impossible for managers to accurately track the tens of thousands of components or elements on such projects, and it can be weeks or months before errors are discovered. In response, California-based start-up Doxel has developed an artificial intelligence system that operates drones and robots to monitor every inch of a construction project and alert managers of potential problems. Doxel's deep learning algorithms can also measure the quality and progress of the work in real time, comparing it to the original budget and schedule.

An Israeli start-up called 3DSignals is also working to improve productivity in heavy industry by using AI guided wireless ultrasonic sensors to track changes in the sounds made by machinery. By analysing the changing sounds of the machinery and comparing them to data sets about the sounds of normally-working and malfunctioning machinery, the algorithm can spot potential breakdowns before they occur. Being able to predict problems earlier can, in turn, allow operators to save time and money.

Productivity improvements can also be driven through better workflow management. According to a 2017 report by market research firm Research and Markets, the market for workflow management systems is estimated to grow from \$3.5 billion USD in 2016 to almost \$9.9 billion USD in 2021 – a compound growth rate of 21 percent. A major part of this growth is likely to be in AI-driven systems that can help companies achieve productivity gains through greater automation of workflow tasks. One innovator

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in this area is AskPorter, an artificial intelligence property management platform currently in Beta. The AskPorter platform can serve as both a digital personal assistant for property managers and a property concierge for tenants. The ‘porter’ allows automation of property management duties such as production and management of legal and compliance documentation and reports. The system can also respond to tenant queries, using a natural language processing algorithm, and resolve many low priority questions and requests from tenants, freeing managers to respond to more complex and urgent tasks.

Natural language processing is also being used to improve productivity in human resources through automation of recruitment tasks. In large companies in particular, recruitment is a very labor intensive operation, but the early stages of the recruitment process, including verifying qualifications and answering initial questions from applicants, lend themselves to automation. Job search company Mya Systems, which works with a large number of tech companies and start-up, has recently introduced a recruitment automation bot dubbed Mya. Mya uses artificial intelligence and natural language processing to ask and answer questions and screen job applicants, as well as schedule interviews and create candidate shortlists. Mya can analyse candidates’ declared competencies against the job description to develop contextual screening questions for each applicant. The platform uses a deep learning-based multiple intent classifier, named entity extraction, and sentence semantic analysis to steer the screening conversation and extract meaningful information from candidate’s responses. Based on candidates’ answers, the bot can independently evaluate a candidates’ suitability for the position and determine how to proceed. Automating the early stages of recruitment can help free recruiters and hiring managers to focus more on interviews and closing offers.

Automating retail

From self-scanning to restocking robots, Springwise has highlighted many ways in which intelligent automation is driving innovation in the retail sector. One company, Deepmagic, has recently developed AI-enabled image recognition software which can analyse how customers act in stores, including what they pick up, and what they put down. Deepmagic is also using the system to develop the Qick Store Platform – a fully automated mini store, intended to be installed in apartment building lobbies, airports and hotels. Customers would gain entry through swiping a card or via a facial scan, take the products they want and leave. The image recognition system would note the items removed and charge the customers’ account automatically.

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Pricing is another retail area where we are seeing deep learning offer practical solutions. The ability to change prices rapidly to reflect shelf-life, competition and market conditions can help retailers maximise their profits at any given time. Rapidmathematix has developed a system that utilizes deep learning algorithms and machine vision to dynamically price and promote products, to match their real-time value. The company's algorithm can constantly re-price items based on information it gathers on freshness, location, inventory, customer need, and changes to costs and competitors' prices. When combined with electronic shelf labels, the system can instantly update prices based on constantly shifting market conditions.

At Springwise, we have covered ways that augmented reality (AR) is increasingly used in business, including in developing training manuals and allowing collaboration between engineers at different sites. Now, AR is also being combined with AI to help steer customers towards the perfect product. RoomAR Analytics is targeting retailers and manufacturers in the furniture and home furnishing industry with a product that uses an augmented reality mobile app to visualize virtual products in the real world and offer personalized product recommendations. End customers and sales staff can use the AR app to see what products will look like in the customers home or office, using deep learning to analyse current trends, and the customers' existing furnishings and visualise those products that will best suit their living situation, taste and style. The system will also offer personalized suggestions based on wishes and conditions of customers.

The future is now

From improving productivity on large construction projects to helping customers choose the right furniture, machine learning and deep learning technology are being applied to almost every aspect of business and industry. The combination of big data and neural networks is helping to unlock the value of data businesses already have by revealing patterns that they can use to create and improve offerings or productivity, or to gain an advantage over the competition. The recent release of machine learning and neural network model builders, such as Gluon and Google's TensorFlow, are also making it easier for software engineers to create and run deep learning systems without specialized training. This will make deep learning tools increasingly accessible to even SMEs.

In the future, deep learning-based image recognition systems will be able to identify words on a screen and read them aloud, help an autistic child decipher facial expressions, or provide instant translations of

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written or spoken words from one language to another. Deep learning may also eventually change our relationship to work by allowing many routine jobs to be done automatically. It is estimated that using Alto automate U.S. federal government tasks now performed by employees would save at least 96.7 million working hours a year, at a cost savings of \$3.3 billion USD. But that also means 96.7 million fewer hours of work available for humans.

For businesses, deep-learning tools hold out the promise of more efficient, more productive and more streamlined operations, and better-informed decision making. While some types of jobs may disappear, new ones will be created, and these will allow people to focus on what they do best, just as being creative, rather than waste hours in tedious or repetitive tasks. Ultimately, cognitive technologies like deep learning will fundamentally change how many of us work—and these changes will likely come much sooner than many think. This makes it vitally important for businesses strategic planning to evolve beyond a focus solely on people to consider the interplay of talent, technology, and design.

SPRINGWISE EDITORIAL TEAM

WHAT

Targeted at B2B marketing, operations, sales and analytics professionals, this platform offers up-to-date data and intelligence.

WHO

Radius

WHERE

United States

CONTACT

www.radius.com
info@radius.com

B2B marketing platform provides AI-driven data insights

Targeted at B2B marketing, operations, sales and analytics professionals, this platform offers up-to-date data and intelligence.

We have previously written about marketing innovations that provide data insights to improve businesses. For example, this company uses AI and data science to measure TV audiences. Another example is an intelligence system that provides retailers with actionable data. Accurate data insights can help businesses to create successful strategies, operate efficiently, drive revenue growth, and more. Radius, a B2B marketing platform, is using predictive AI to provide businesses with actionable insights and a competitive advantage.

Radius has a constantly improving data set, called The Network of Record. The company currently provides four different products to businesses: Radius Revenue Platform, Radius Advertiser, Radius Prospector, and Radius Connect. The Revenue Platform uses predictive intelligence to drive revenue. Radius Advertiser is a B2B advertising solution that connects with buyers on over 500 channels. Radius Prospector accelerates sales using data from The Network of Record. Radius Connect can quickly source company and contact data and it allows users to add this information to Salesforce.

Furthermore, using the Radius Omnichannel, B2B marketers can initiate campaigns on a variety of channels. This includes email, field, search and digital. Additionally, campaigns can be initiated on social channels that were previously only available for use with B2C customers, such as Twitter, Google, Facebook, and more.

The solutions provided by Radius improve a business's marketing, advertising and sales operations. It does so through promoting efficiency, productivity and accuracy using big data. How else can AI data insights enable businesses to execute better strategies?

WHAT

A new pricing solution enables e-commerce businesses to personalise prices and promotions based on a customer's location.

WHO

Darwin Pricing LLC

WHERE

Switzerland

CONTACT

www.darwinpricing.com
info@darwinpricing.com

Geo-targeted pricing service optimises e-commerce sales

A new pricing solution enables e-commerce businesses to personalise prices and promotions based on a customer's location.

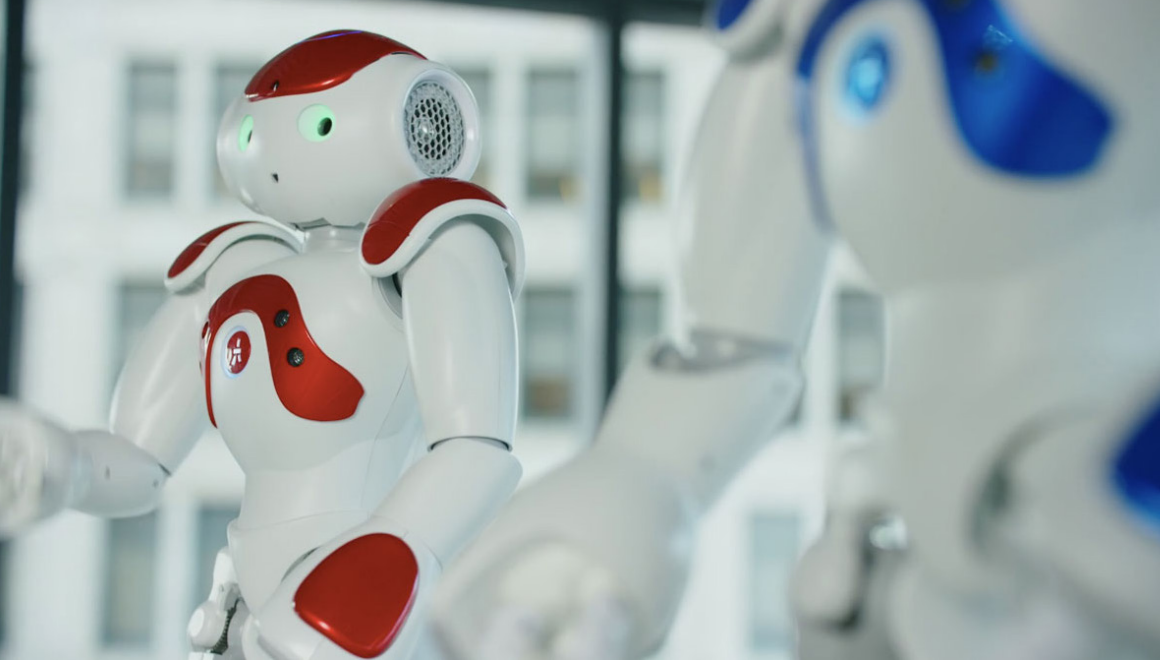
Darwin Geo-Pricing is a new pricing service that generates geo-targeted prices and promotions. Created by Darwin Pricing LLC, the service uses Machine Learning Artificial Intelligence (AI) to optimise the sales of e-commerce retailers. Darwin Pricing uses artificial neural networks to provide a real-time model of the varied prices in different locations.

Using Machine Learning algorithms, the service creates optimal prices and promotions for each customer, depending on their geographical location. This enables e-commerce retailers and brands to personalise their pricing for each customer, therefore generating more profit. Additionally, the real-time collection of data responds to any market changes, further boosting the accuracy of the pricing system.

Through a number of strategies using the data provided by Darwin Pricing, businesses can boost their sales. For example, constructing sales campaigns based on competing local retailers in any city, and creating personalised discounts for customers about the exit without a purchase. Darwin Pricing also offers a customisable coupon box, compatible with smartphones and tablets. This feature can grow social media followers and increase sign ups to newsletters.

E-commerce businesses can install Darwin Pricing as a plug-in. The service is fully customisable so that each business can tailor it to their specific needs. Moreover, Darwin Pricing uses REST API, an API that uses HTTP requests to manage data. Therefore, along with standard e-commerce platforms, any online store can incorporate it. Many plug-ins are already integrated in Darwin Pricing. For example, Shopware, Shopify, Magento Commerce, osCommerce, Websphere Commerce, WordPress, PrestaShop, Hybris, 3dcart, Oracle Commerce and Demandware. If desired, other plug-ins are also integratable.

We have previously written about Geo-spatial retail innovations such as a shopping app that alerts users when an item on their wish list is nearby. Another example is an app used by customers to alert stores about empty shelves. Darwin Pricing also enables businesses to increase profits. The service is unique because it uses geographical data and personalisation to create more equal wealth distribution. How else can e-commerce retailers and brands improve their performance using AI?



At a Glance

WHAT
Watson Ads enable marketers to interact with customers in natural language, as they gather data about consumer behavior.

WHO
Watson Ads

WHERE
United States

CONTACT
www.ibm.com/watson
www.ibm.com/contact

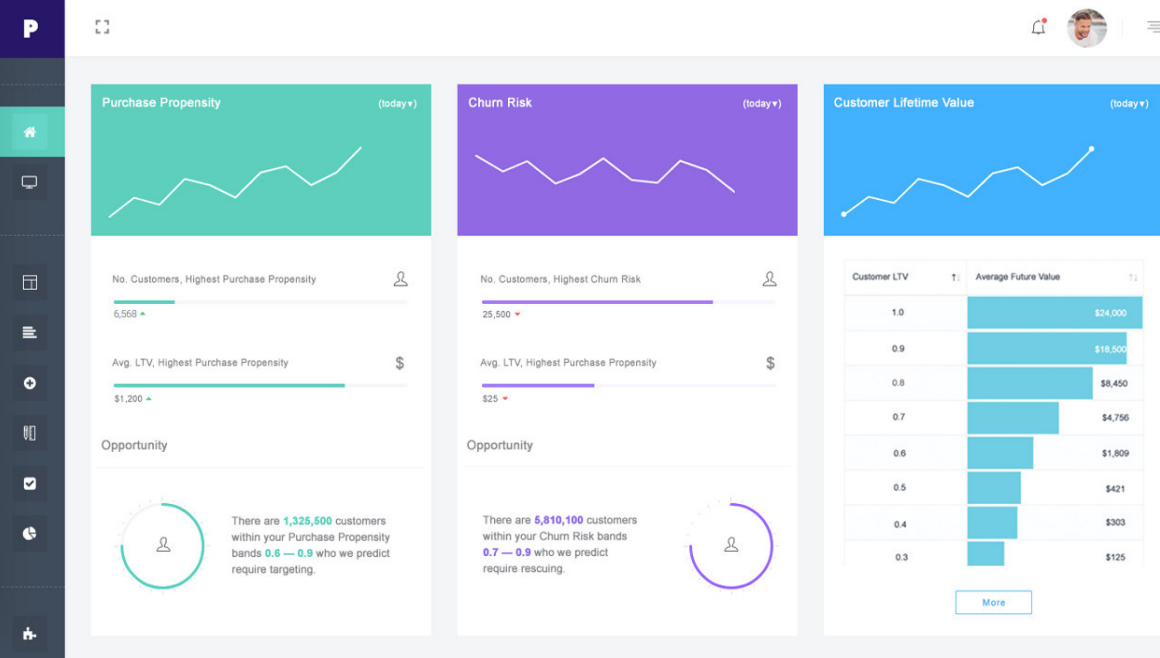
AI for marketers to leverage cognitive advertising

Watson Ads enable marketers to interact with customers in natural language, as they gather data about consumer behavior.

In an increasingly noisy and cluttered world, advertisers are seeking ways of using technology to deliver more personal and relevant content to consumers in ways that can scale to reach millions. Artificial intelligence is leading the way in providing a solution. A Canadian startup created chatbots that use AI to have conversations with users, and in Japan, a creative agency has appointed an AI robot that mines creative databases to provide input as their creative director. The latest innovation comes from The Weather Company in the form of Watson Ads, which use AI to answer consumer questions through the medium of advertising.

The Weather Company, an IBM business since January this year, offers highly accurate weather data to consumers and businesses. Watson Ads is their latest product and uses what is called 'cognitive advertising' to interact with consumers. Users ask questions in natural language, as they would to Siri, via voice or text and Watson can respond accurately. In their most recent collaboration with Macy's, for example, buyers can use Watson as a shop assistant to find out where certain products are in-store or which brands they have in stock. Aimed at brands looking to have more valuable interactions with customers, Campbell Soup Company, Unilever and GSK Consumer Healthcare were among the first to collaborate with Watson.

What's more, even as consumers are learning about the product, Watson is gathering data from their interactions in order to help marketers better understand brand perception, improve consumer experience and inform creative strategies. Jeremy Steinberg, global head of sales at The Weather Company said of the innovation, "We've embraced big data and leveraged it to improve every aspect of our business, from forecast accuracy to ad targeting." Are there more ways businesses can use this new technology to improve consumer experience?



At a Glance

WHAT

A new advertising solution uses machine learning to predict customer behaviour and improve advertising campaigns.

WHO

Programmai

WHERE

United Kingdom

CONTACT

www.programmai.com
www.programmai.com/contact-us

Predictive advertising identifies target audience

A new advertising solution uses machine learning to predict customer behaviour and improve advertising campaigns.

Programmai is a machine learning solution for brands and retailers to use for advertising. Using Artificial Intelligence (AI), the tool can create predictive advertising campaigns.

Programmatic advertising is a way for businesses to target their campaigns at a specific audience. A more accurate customer reach increases a business's advertising impact. It also removes ad spend on those that aren't a part of the target audience. Programmai does this using machine learning methods. The data collected by Programmai provides insights into the target customer's traits and behaviours that were previously unknown.

The company's mission is "To disrupt how advertising is bought by producing 'predictions' that enable you to bid smarter whilst anticipating your customer's next move". Programmai collects data that enables businesses to make predictions such as how likely it is a consumer is going to make a purchase. The technology can also help in the prediction of the lifetime value of a customer, measuring the entire future potential a customer has.

Predictive solutions are changing the ways businesses operate. While Programmai is altering the way businesses plan and measure advertising, other industries are also using predictive solutions to streamline how a business operates. A group of hospitals in France uses machine learning to predict admissions. Another example is an app that can predict court decisions using big data. In what other ways can predictive solutions enhance or re-structure how a business operates?



At a Glance

WHAT

An AI-driven platform aims to predict exactly where and when brands place their marketing for the most impact.

WHO

DemandJump

WHERE

United States

CONTACT

www.demandjump.com
www.demandjump.com/company/contact

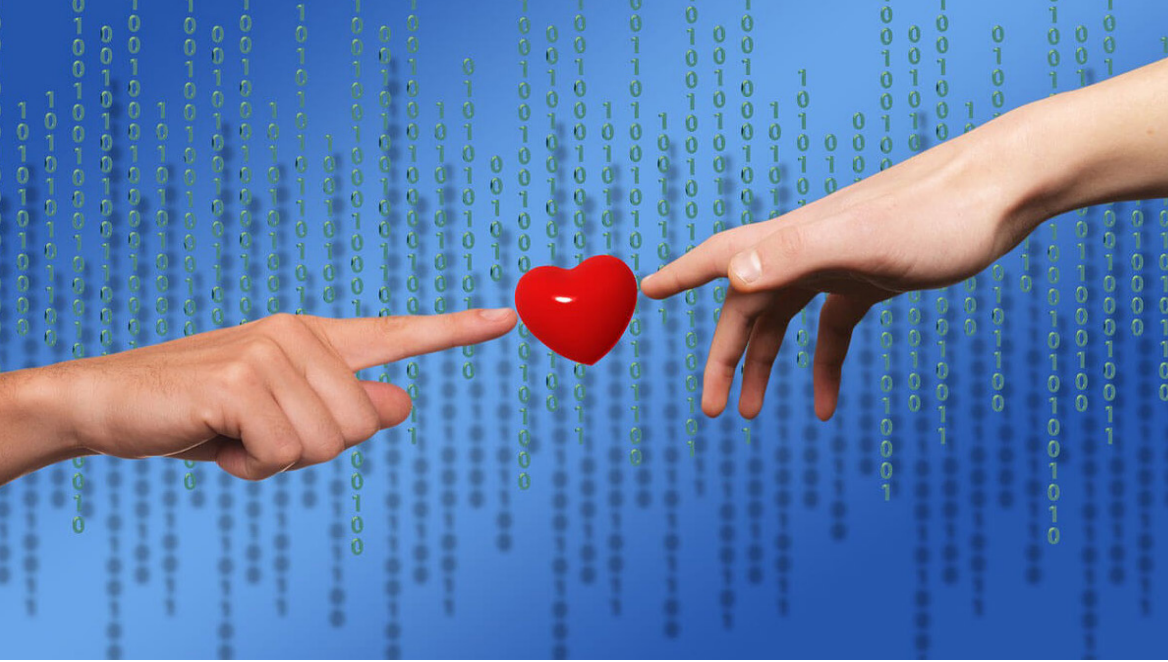
New AI marketing tool provides detailed analytics

An AI-driven platform aims to predict exactly where and when brands place their marketing for the most impact.

How much more impactful could your marketing be if you knew precisely what content to write and where to publish it to take advantage of up-to-the-minute trends? This is the question that Indianapolis-based DemandJump hopes to answer. The company has developed the first Artificial Intelligence Marketing (AIM) platform, dubbed TrafficCloud, which shows marketers exactly what to do next to maximize revenue growth, outmanoeuvre the competition, and stay ahead of market changes.

While most marketing tools collect historic data, such as page hits, designed to help companies with customer retention or cross-sell, TrafficCloud focuses on new customer acquisition. By using AI to collect data for every event and page view, the company is able to link customer activity across devices and present a much more detailed analysis of traffic between sources. The company's analytics can then pinpoint which sites have the greatest influence in a brand's competitive area, and which sites can help drive the highest number of customers to the brand. DemandJump claims that its proprietary algorithms, using machine learning, graph theory, algebraic topology, and natural language processing, can "map each client's entire digital ecosystem and then cull the data to reveal revenue growth opportunities brands didn't even know existed".

The marketing technology landscape has changed rapidly over the past several years. In 2011 there were just 150 companies offering marketing solutions, and today there are more than 5,000. These include an AI that matches brands with social media influencers and a system that produces real-time in-store data. This growth means that marketers must pay much closer attention to constantly shifting market dynamics in order to stay ahead of the competition. DemandJump currently has around 14 customers, but claims to have a number of major deals with multi-billion dollar companies pending, and is growing quickly. Will the type of AI marketing tool developed by DemandJump prove to be the way forward for marketing?



At a Glance

WHAT

Corti helps medical personnel make critical decisions in the heat of the moment on calls to emergency services.

WHO

Corti

WHERE

Denmark

CONTACT

www.corti.ai

www.corti.ai/contact

AI assistant helps detect heart attacks on emergency services calls

Corti helps medical personnel make critical decisions in the heat of the moment on calls to emergency services.

Early recognition of cardiac arrest is vitally important as the chance of survival decreases about 10 percent with each minute. In Denmark AI assistant Corti is listening in to phone calls to emergency services to help detect signs of a heart attack. With Corti implemented, the dispatcher gets a digital assistant that listens in on the conversation and helps to look for important signals in both verbal communication, as well as tone of voice and breathing patterns, while also considering other metadata.

All the data provided during the emergency call is automatically analyzed by Corti and then compared to the millions of emergency calls – which Corti has already analysed –to find important patterns. As Corti's understanding of the incident increases, the assistant will try to predict the criticality of the patient's situation based on symptom descriptions and the signals gathered from voice and audio. These insights are delivered to the dispatcher as alerts and recommendations.

Artificial intelligence is seeping into every aspect of every day life, with recent uses including the system that hunts the internet for signs of suicidal people to help prevent them coming to harm and an AI politician helping answer the public's questions in New Zealand. How could artificial intelligence help your operation?



At a Glance

WHAT

VALCRI, an AI algorithm, processes criminal databases and other data sets, suggesting lines of inquiry to aid police, and may even be able to pre-empt crime.

WHO

VALCRI

WHERE

European Union / United Kingdom

CONTACT

www.valcri.org

wong@mdx.ac.uk

EU police forces trialling AI detectives

VALCRI, an AI algorithm, processes criminal databases and other data sets, suggesting lines of inquiry to aid police, and may even be able to pre-empt crime.

We've already seen how, in China, an image-recognition algorithm is aiding surveillance in real-time, and now UK police will be using similar algorithmic technology to assist criminal analysts.

The system, called VALCRI (Visual Analytics for sense making in CRiminal Intelligence analysis) is the result of an EU-wide research project fronted by Middlesex University, involving 18 organisations of various expertise from law firms to teams of scientists, and aims to herald the age of 'intelligence-led policing'. VALCRI analyses anonymized criminal records, and pulls in other various data sets that offer insight into social and legal factors, in order to suggest likely lines of inquiry for detectives, a process that is classically highly labor-intensive for criminal analysts and subject to human error or biases.

VALCRI is not intended to solve crimes, but offers data and suggestions of possible leads in a graphics-oriented approach across two large touchscreen consoles. The system features an AI algorithm that is capable of learning as more data is added, so that its ability to see patterns only grows more robust as data is added. As well as assisting ongoing investigations, VALCRI also claims to be able to pre-empt crimes by spotting developing patterns that may have historically led up to incidents of crime, and will also provide a vast dataset for criminal researchers that may be used to inform policy on crime prevention. A pilot project is underway in the UK with the West Midlands Police Force and in Brussels, whereby VALCRI has been fed with three years worth of local criminal data.

What ethical and legal frameworks would need to be put in place if we were to see the onset of 'Minority Report' pre-emptive crime intervention?

WHAT

A new technology powered by deep learning offers coaches actionable insights by tracking every aspect of soccer and cricket games from videos.

WHO

Flixsense

WHERE

Australia

CONTACT

flixsense.com/index.html

shaik@flixsense.com

Sports video intelligence platform provides instant match footage analysis

A new technology powered by deep learning offers coaches actionable insights by tracking every aspect of soccer and cricket games from videos.

We have already seen the effect of innovation on the sporting world, from new tech used to take cricket games to a new level to a wearable patch that analyses athletes' sweat. The Australian innovation Flixsense gives the world's coaches and teams the unique opportunity to access instant match footage analysis. The company uses AI technology to provide coaches with the insight they need to win.

The company currently consists of a three-person team, and is looking to expand. The platform is able to track every aspect of the football game, from goals and passing patterns to ball possession and player tracking. There is also a platform specifically designed for cricket which does ball tracking, batting stroke analysis and player tracking. The technology uses deep learning algorithms to provides unique insights into match footage which can be used to help coaches improve their team's results. The AI models are able to expand their knowledge and become smarter the more videos are added. The startup is hoping to expand their technology to suit more sports. Consumers are currently able to sign up to ask for a demo of the platform and to receive product notifications.

This is an innovative use of AI technology which we have seen implicated in other parts of the fitness industry, such as providing tailored workouts to gym goers and smart calorie counters, however Flixsense provide a unique service specifically aimed at world standard team sports. How else could AI technology be used in the professional sporting industry? How might this video platform revolutionise worldwide coaching techniques?



At a Glance

WHAT

A new system uses drones and AI to improve accuracy and efficiency on large construction projects

WHO

Doxel

WHERE

United States

CONTACT

www.doxel.ai

www.doxel.ai/#/press

New AI system set to disrupt the construction industry

A new system uses drones and AI to improve accuracy and efficiency on large construction projects

The construction industry accounts for around USD 10 trillion annually – that’s about 13 percent of the global GDP. But up to now, this sector has lagged behind in productivity gains. This is due largely to the fact that large projects involve many different sub-teams, each installing different components. It is impossible for managers to accurately track every aspect of such projects. It could be weeks or months before they realise an error was made. According to the McKinsey Global Institute, most large projects take 20 percent longer to finish than anticipated, and run up to 80 percent over budget. California-based startup Doxel is hoping to change this with an artificial intelligence system that can monitor every inch of a construction project and alert managers of potential cost overruns, inefficiencies and errors.

We have already seen the use of drones and robots to navigate spaces people can’t reach. Some examples are a robot snake that can crawl through pipes and a robotic eel that can search out water pollution. Doxel significantly expands this by using autonomous devices, such as drones and robots. They are equipped with LIDAR and HD cameras to visually monitor an entire construction project, even in small, dark spaces that are difficult for humans to reach and see. The system then uses deep learning algorithms to measure the quality and progress of the work in real time, comparing it to the original budget and schedule. The system can process three-dimensional data and determine how much material has been installed correctly, and where the project is in danger of running over-budget. Project managers can then use this information to make changes early in the project and boost productivity. Errors can be spotted and fixed immediately, before they lead to cost and time over-runs.

Doxel is designed for use on large projects with contracts of USD 20 million and above. The system provides project managers with a cloud-based dashboard which can keep track of the hundreds of thousands of items in a project in real time. This could allow them to focus on making real improvements based on accurate data. The company has recently raised USD 4.5 million from a venture capital group led by Andreessen Horowitz. What other types of projects could benefit from a similar system for keeping track of progress?

WHAT

A new recruitment chatbot helps each candidate with their job search while streamlining the process for employers.

WHO

Mya Systems

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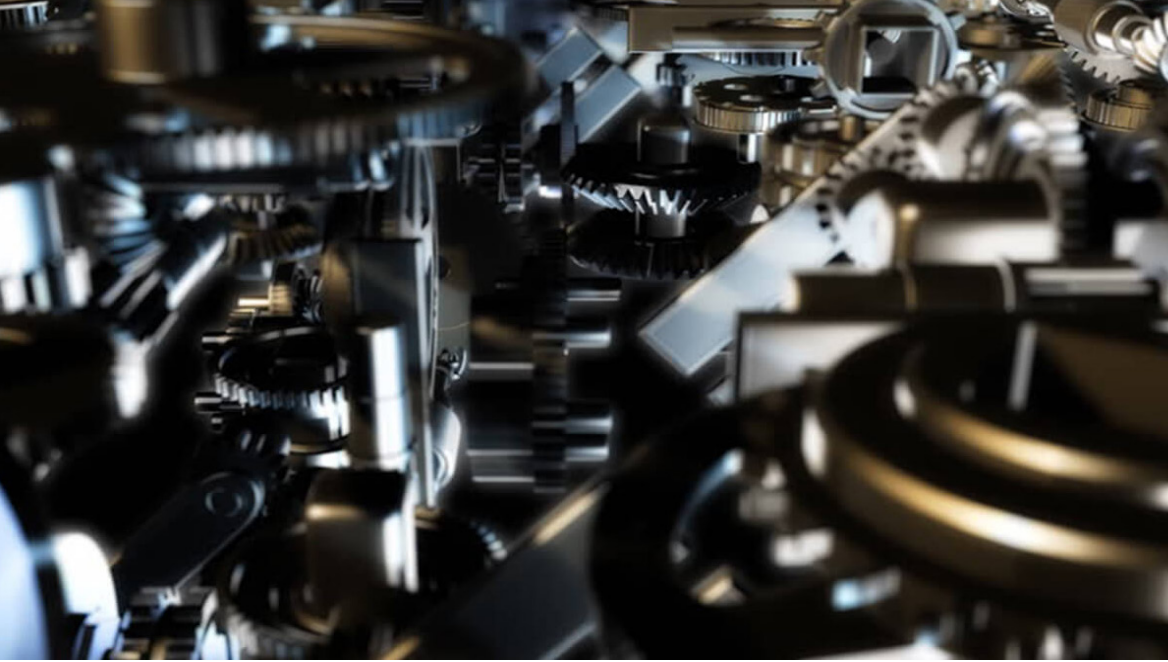
AI recruiter does all the tedious tasks

A new recruitment chatbot helps each candidate with their job search while streamlining the process for employers.

Looking for a job is generally time-consuming and stressful. Candidates often hear back from only a handful of recruiters, while employers stress that they aren't finding the right people. Formerly known as FirstJob, Mya Systems's Artificial Intelligence (AI) chatbot is hoping to improve the process for both employers and jobseekers.

As soon as a candidate applies, Mya gets in touch via instant messaging. If she spots gaps in a resume, she will ask detailed follow-up questions. Candidates then get the chance to better explain how they fit the position. For employers, Mya ranks candidates according to qualifications, prioritizing those who answer the most frequently asked questions about each company. Mya stays in touch with candidates throughout the process. It send alerts about other potentially suitable jobs and when a position has been filled. Mya also helps employers by handling time exhausting tasks such as phone screening and interview scheduling. Targeting millennials, the service is free for jobseekers, while companies pay a fee based on the number of applications they process each month.

We're seeing a number of different ways AI is being used to assist employees, from cognitive advertising to beer brewing that evolves via feedback. What industries have yet to try AI-based, smarter, and faster solutions?



At a Glance

WHAT

An Israeli startup is using deep learning and ultrasonic technology that could revolutionise the automotive industry.

WHO

3DSignals

WHERE

Israel

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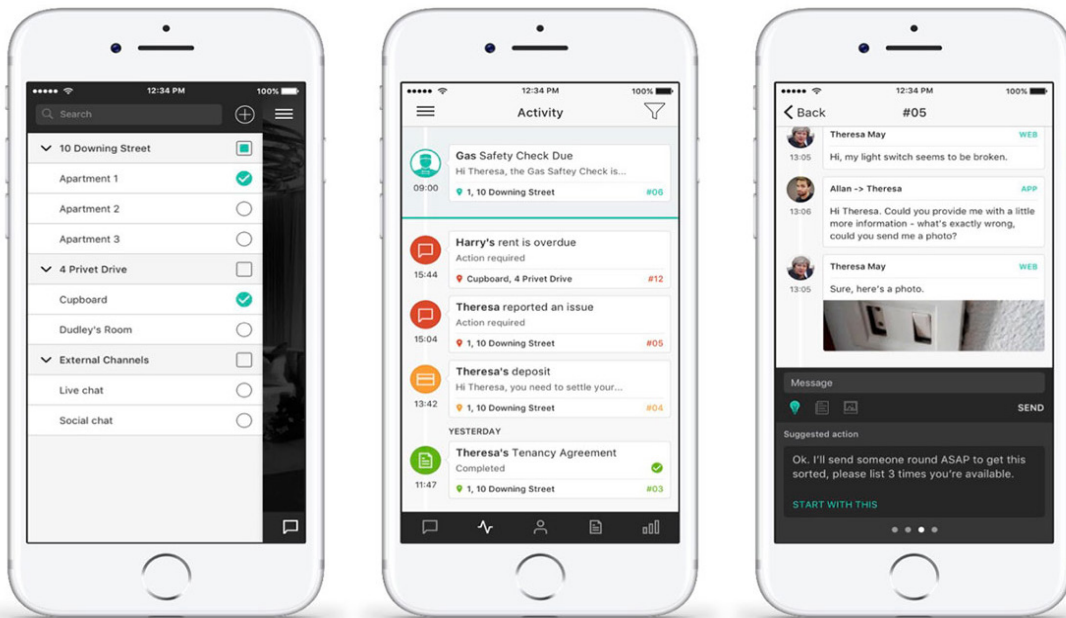
Ultrasonic sensors detect mechanical problems before they occur

An Israeli startup is using deep learning and ultrasonic technology that could revolutionise the automotive industry.

When it comes to machinery, diagnosing specific problems can be difficult. Now, a new Israeli startup called 3DSignals is using wireless ultrasonic sensors to track changes in the sounds made by machinery, to predict when breakdowns are about to occur.

The technology uses deep learning to listen for deviations from the norm in musical and mechanical acoustics. It identifies anomalies, classifies patterns of equipment failure and predicts issues before they interrupt production. This has a number of benefits. First of all, it reduces the impact of human error, which can cause costly unplanned downtimes. Secondly, it means users can react to problems quicker, meaning perishable components are less likely to be significantly damaged. The tool also allows machine operators to keep track of the condition of their equipment and plan maintenance breaks accordingly. 3DSignals is all about increased efficiency and, according to the founders, "When trained, the 3DSignals deep learning algorithms are able to identify [and] predict specific problems in advance with 98 percent accuracy,"

Innovations in the automotive space continue to appear. In September last year, we covered a startup who launched a fleet of driverless taxis. Given car giants like BMW and Volkswagen's aim to launch their own self-driving taxis, rather than consumer vehicles, will the focus be on applications for autonomous taxis?



At a Glance

WHAT

With an intelligent assistant interface, this new platform helps tenants and managers handle queries and routine contractual work quickly and efficiently.

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AskPorter

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AI property management saves time and money

With an intelligent assistant interface, this new platform helps tenants and managers handle queries and routine contractual work quickly and efficiently.

AskPorter is a white label artificial intelligence property management platform. The company's goal is to help reduce inefficiencies in workflows, ultimately transforming the role of property manager into that of a supervisor or concierge. Porter is the natural language processing assistant who handles all initial queries.

Designed to bring together the many different aspects of property management, the AskPorter interface is the same for all users, whether a tenant, owner or manager. Accessible via mobile, desktop or email, the platform seamlessly moves between devices. Property managers can see on one screen all similar documents or all stakeholders involved in a specific property or set of properties. Customized reports can be produced and shared, ranging in detail from a specific activity across all managed properties to all relevant information for a single property.

The more the system is used, the smarter Porter becomes. By acting as the first point of contact for queries, many of the low priority, easily resolvable yet time-consuming questions and requests from tenants can be managed quickly and easily. When the assistant needs advice, the AI knows which team member to bring into the conversation.

Regular tasks, including management of legal and compliance documentation, can be automated, freeing up a manager's time to focus on building relationships and creating more personalized solutions. The AskPorter team believes that the platform could help reduce property management costs by up to 50 percent. Closed beta trials begin in December 2017, with a public beta version available at the end of quarter one in 2018.

Natural language processing is an exciting area of exploration, with industries ranging from retail to healthcare testing out the possibilities. For sellers, a system of virtual sales assistants helps improve interaction with customers, and for understaffed medical facilities, a chatbot supports doctors by speeding up the process of diagnosis and offering treatment options. How might partnerships between businesses using artificial intelligence provide additional products and services?

**WHAT**

A new retail solution uses artificial intelligence to enhance the shopping experience and enables stores to operate unattended.

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Startup uses AI to fully automate retail stores

A new retail solution uses artificial intelligence to enhance the shopping experience and enables stores to operate unattended.

We have seen many retail innovations demonstrating that the future of retail is both digital and offline. For example, a touchscreen corridor that uses image recognition and purchase histories to suggest and locate items to customers. Another example is this smart shopping trolley that charges customers automatically. A new startup, called DeepMagic, also uses digital innovations to enhance the experience of a physical store. Using Deep Learning Artificial Intelligence (AI), DeepMagic is enabling retailers to create unattended physical stores that are fully automated.

DeepMagic offers two products: the Qick Store Platform and the Qick Kiosk. The Qick Store Platform is a solution that lets customers shop with mobile scan and pay. Compatible with iPhone and Android phones, the shopper app also has integrated anti-theft controls. Using AI, computer vision and cameras, DeepMagic tracks the activities of customers in store and recognises any suspicious behaviour. Additionally, store managers can access this information in real-time.

The Qick Kiosk is a pop-up store that is fully automated. Image recognition software enables these unattended mini-stores to operate securely. The ideal positioning of Qick Kiosk is in places such as hotel lobbies and residential buildings – locations where shops do not exist but people would like to see them. Customers sign up on the Qick portal or mobile app. After signing up, customers can access and shop in the Qick Kiosk stores.

Products taken from retailers using DeepMagic are automatically charged to a customer's account. Alternatively, customers can QickScan a label to arrange a home delivery. Unattended stores provide convenience to both retailers and customers through extending store hours, saving costs and automating check-out and security. An increasing number of retail solutions are using AI to provide a more seamless shopping experience for customers. Moreover, we are seeing that these solutions are not limited to a single platform. Instead, omni-channel approaches are being used to draw in customers and increase sales. What other AI solutions could facilitate retailers to digitally enhance the shopping experience of a brick and mortar store?



At a Glance

WHAT
A new pricing system uses deep learning algorithms and real-time data to price produce and reduce food waste.

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AI algorithm predicts prices of produce based on freshness

A new pricing system uses deep learning algorithms and real-time data to price produce and reduce food waste.

We have seen many solutions that tackle the issue of food waste, such as grocery stores introducing new pricing systems to ensure products close to expiring will sell. One example of this is a real-time pricing solution that uses radio frequency identification (RFID), electronic shelf labelling, and a dynamic pricing engine to offer cheaper prices. Another example is an automated discount rack that reduces prices for expiring products both online and in store. A new solution, called RapidMathematix, also aims to reduce food waste using deep learning algorithms and machine vision.

RapidMathematix provides automated retail pricing for fresh produce, changing the prices of produce depending on freshness, market conditions and competition. This ensures that customers get their money's worth of what they pay and that stores are able to reduce food waste by offering discounts. Data collected from various sources about freshness, location, product and demand level is processed by RapidMathematix's algorithms to offer the most accurate prices. Additionally, the system is connected to electronic shelf labels, enabling it to calculate and recommend prices in real time.

IoT devices are also integrated into the RapidMathematix system and are used to gather information from inside the retail store. For example, information is collected from products, the shop floor, shelves and customer devices. The data offered by the system can also be used to negotiate prices with vendors, beat competitor prices, and give users more control over their pricing decisions.

In the retail industry, promotions based on real-time data can reduce food waste and increase sales. What other industries could increase sales by using deep learning AI to offer fast and targeted promotions?

WHAT

Using AR and AI, this app can be used to visualise home furnishings before purchasing products.

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Interior design app lets users visualise products in the real world

Using AR and AI, this app can be used to visualise home furnishings before purchasing products.

A new interior design app, called RoomAR, uses Augmented Reality (AR) and Artificial Intelligence (AI) to enhance the home furnishing experience. Targeted at retailers and manufacturers, RoomAR allows users to visualise how virtual products will appear in the real world.

Using Deep Learning, Machine Learning algorithms and computer vision, RoomAR Core analyses the user's sense of style. Taking style and living conditions into consideration, the mobile app can personalise the product recommendations it offers to each user. After recommending products, the app connects to an online shop through RoomAR Shop, enabling users to purchase products. A personal and easy-to-use service, RoomAR offers an innovative way to furnish homes and enables businesses to increase sales. Additionally, RoomAR is useable as a sales tool, to help advertise products at trade fairs and in showrooms.

Data-based business insights are also available to retailers and manufacturers through RoomAR Analytics. Data providing insights into trends, customer activity and target customers, is collected using machine learning techniques.

RoomAR is changing the way consumers shop for furnishing and the way businesses sell furnishing. By offering AR visualisations of products, consumers and businesses can see exactly how a product will look in an environment. RoomAR makes this possible by merging online and offline retail experiences together. Here at Springwise, we have previously written about other businesses that also offer an omni-channel experience. For example, this interior decorating app lets users experiment with room decor, while this app uses visual recognition to search for furniture. What other industries could utilise AR and AI solutions to increase sales and improve business insights?

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