# Domino's: Using Artificial Intelligence To Serve Up Hundreds Of Thousands Of Pizzas Every Day

Domino's Pizza is the largest pizza company in the world – it sold over 300,000 pizzas every day in 2017,[1](http://127.0.0.1:5002/c13.xhtml#c13-note-0001) from 48,000 stores in 85 markets.

While cooking and delivering pizzas may not immediately seem like the most tech-driven business, Domino's has consistently ensured it is harnessing new technologies as they become available. Most noticeable until now has been its drive to allow customers to order pizzas from any platform – over 60% of its sales now come through digital channels[2](http://127.0.0.1:5002/c13.xhtml#c13-note-0002) and you can order pizzas through smart TVs, Facebook, Twitter, Amazon Echo, smart watches and numerous other methods – including by simply sending a pizza emoji via SMS.

Data and analytics have long played a key part in Domino's marketing strategy, and it collects vast amounts of data to understand who is ordering its pizzas and how it can improve its service. Now it is embracing artificial intelligence (AI) to ensure a more consistent quality and build a speedier, more environmentally friendly delivery infrastructure.

## What Problems Is Artificial Intelligence Helping To Solve?

In the fast food business, customers are fickle creatures. New options are regularly becoming available as habits and food fashions change, and if pizzas are cooked or delivered that do not meet their expectations in terms of consistency and quality, customers will become dissatisfied. This means they are likely to look to new alternatives and rival businesses for their fast food fix.

And while pizza delivery may be a very convenient way of getting fed from a customer's point of view, it is an expensive exercise – in terms of both fuel and wages, which the company has to cover, and the environmental cost of making an individual journey to deliver each pizza.

## How Is Artificial Intelligence Used In Practice?

Domino's has started using a system called Pizza Checker that photographs every pizza when it leaves the oven, and then uses machine learning algorithms to inspect it for quality before it reaches the hungry customer.[3](http://127.0.0.1:5002/c13.xhtml#c13-note-0003)

The camera system checks the type of pizza against the customer's order to make sure they are getting what they paid for. It also verifies that toppings are distributed evenly and that the crust has been properly baked at the correct temperature.

The system – installed in 2,000 Domino's kitchens in seven countries in 2017 – sends users a picture of their pizza before it is delivered, and also notifies them if a quality failure meant that the pizza had to be remade. The hope here is that this will make them more understanding when there are occasionally inevitable delays!

AI is also used when processing customer orders received over the telephone. It has developed its own “virtual assistant” technology in the style of Apple's Siri, which can communicate with customers by voice when they call to place an order. The first iteration of this technology was launched in 2014 and is known as Dom. Last year, a new version – called DRU (Domino's Robotic Unit)[4](http://127.0.0.1:5002/c13.xhtml#c13-note-0004) – was rolled out, featuring more sophisticated natural language processing technology.

This means it can respond to more complex queries and understand the sometimes very different speech patterns and mannerisms used by different callers.

DRU is actually the name used for the company's autonomous technology across all of its units, including the pizza checkers, virtual ordering assistants and its autonomous delivery vehicles.

Yes, Domino's is also actively working to make self-driving pizza delivery a reality. Thanks to a partnership with Ford, pizza lovers in Ann Arbor[5](http://127.0.0.1:5002/c13.xhtml#c13-note-0005) and Miami,[6](http://127.0.0.1:5002/c13.xhtml#c13-note-0006) USA, have been able to take part in an experiment where their pizzas are delivered by a fleet of autonomous vehicles equipped with ovens to keep the pizzas warm during their journey. In their initial trial, the vehicles had to be accompanied by humans.

More recently, the company has been launching completely autonomous delivery pilots in Germany and the Netherlands, where it is partnering with Starship Technologies.[7](http://127.0.0.1:5002/c13.xhtml#c13-note-0007) Don Meij, Domino's Group CEO and Managing Director, says: “We are a global company and we are eager to progress innovative technology in all of the countries in which we operate – we are very excited to be partnering with Starship as it brings regular deliveries by robot one step closer to commercial operations.”

## What Technology, Tools And Data Were Used?

Domino's Pizza Checker has been developed by Dragontail Systems and uses Google image recognition algorithms to identify the type and placement of toppings on a pizza, as well as the temperature that the pizza was cooked at. It uses data from the customers’ orders to ensure the right pizza is being prepared. This is done using computer vision technology, which allows AI algorithms to be trained to “see” – and recognise objects in the same way humans do.

As for autonomous delivery – Domino's has partnered with Starship Technologies to use delivery robots that are capable of guiding themselves to customers’ homes. The six-wheeled Starship bots use GPS, radar, ultrasonic sensors, as well as cameras to navigate autonomously. The customers will then be able to access the compartments where their food is kept hot, and the drinks are kept cold, by using a smartphone app.

## What Were The Results?

Domino's hopes that the computer vision system will lead to fewer pizzas being rejected because they don't meet customers’ quality expectations. In worst case scenarios, this can lead to customers who otherwise have high lifetime value expectations to the chain taking their custom elsewhere.

This year the business announced that it will invest a further $1 million in fitting its kitchens out with the automated camera systems provided by Dragontail.[8](http://127.0.0.1:5002/c13.xhtml#c13-note-0008)

And although Domino's has said that the DRU delivery vehicle won't be appearing at customers’ doorsteps “tomorrow”, it fully anticipates that autonomous delivery will become a reality in the near future.

## Key Challenges, Learning Points And Takeaways

* When you have huge numbers of outlets serving millions of customers, those customers will come to expect a level of consistency of the quality of products and service. AI can help maintain that level.
* Companies like Domino's believe that natural language technology is at a stage where it can provide the same level of customer service as a human telephone operator.
* As well as moving people around, autonomous vehicles have applications for moving goods from place to place, and even delivering them straight to customers’ doors. As well as saving the operators’ money (which can be passed onto the customers with lower prices), this could have positive environmental benefits as robots will be able to route themselves more efficiently than humans.

## Notes

[1](http://127.0.0.1:5002/c13.xhtml#c13-note-0001-1)The Times, Pizza guzzlers give Domino's a slice of success: [https://www. thetimes.co.uk/article/pizza-guzzlers-give-dominos-a-slice-of-success- dzftlldtn](https://www.thetimes.co.uk/article/pizza-guzzlers-give-dominos-a-slice-of-success-dzftlldtn)[2](http://127.0.0.1:5002/c13.xhtml#c13-note-0002-1)PR Newswire, Domino's on Quest for Digital Dominance Using Artificial Intelligence: [https://www.prnewswire.com/news-releases/dominos-on- quest-for-digital-dominance-using-artificial-intelligence-300633827 .html](https://www.prnewswire.com/news-releases/dominos-on-quest-for-digital-dominance-using-artificial-intelligence-300633827.html)[3](http://127.0.0.1:5002/c13.xhtml#c13-note-0003-1)Interesting Engineering, Domino's Will Use AI to Make Sure Every Pizza They Serve Is Perfect: <https://interestingengineering.com/dominos-will-use-ai-to-make-sure-every-pizza-they-serve-is-perfect>[4](http://127.0.0.1:5002/c13.xhtml#c13-note-0004-1)ZDNet, Domino's partners with Nuance for DRU artificial intelligence: <https://www.zdnet.com/article/dominos-partners-with-nuance-for-dru-artificial-intelligence/>[5](http://127.0.0.1:5002/c13.xhtml#c13-note-0005-1)Tech Radar, Ford and Domino's are filling self-driving cars with pizza to see how we feel about it: <https://www.techradar.com/news/ford-and-dominos-are-filling-self-driving-cars-with-pizza-to-see-how-we-feel-about-it>[6](http://127.0.0.1:5002/c13.xhtml#c13-note-0006-1)Tech Radar, Ford and Domino's demonstrate self-driving deliveries with – what else – pizza: <https://www.techradar.com/news/ford-and-dominos-demonstrate-self-driving-deliveries-with-what-else-pizza>[7](http://127.0.0.1:5002/c13.xhtml#c13-note-0007-1)Starship, <https://www.starship.xyz/press_releases/starship-technologies-launches-pilot-program-with-dominos-pizza-enterprises/>[8](http://127.0.0.1:5002/c13.xhtml#c13-note-0008-1)Domino's Pizza moves forward with Dragontail Systems AI: [https://www. finnewsnetwork.com.au/archives/finance\_news\_network190563.html](https://www.finnewsnetwork.com.au/archives/finance_news_network190563.html)