

Conversational AI Reinvents the Drive-Thru

Lee's Famous Recipe Chicken overcomes staffing shortage, improves order accuracy with Hi Auto drive-thru attendant.



"It's amazing the level of accuracy we see with the voice recognition technology."

—Chuck Doran, franchise co-owner,
Lee's Famous Recipe Chicken

Challenge

If you've ever ordered at a drive-thru, you can probably guess that speed, accuracy, and customer experience are constant challenges for the quick service restaurant (QSR) industry. Noise, sound quality, and simple misunderstandings can be frustrating for customers as well as employees. In recent years, growing labor shortages and increasing turnover have made drive-thru challenges much more acute.

Solution

Lee's Famous Recipe Chicken is using conversational AI to help employees serve customers and improve the drive-thru experience. The system—created by Intel® Partner Alliance Gold member Hi Auto—greet customers, takes orders, and even upsells by promoting new items and recommending sides, drinks, and desserts. The system speaks English and will speak Spanish in future releases. If a customer asks a question the Hi Auto attendant doesn't understand, it brings in a Lee's employee to finish the transaction.

Result

In the pilot project, the Hi Auto attendant completed over 94 percent of orders on its own with a 95 percent order accuracy rate.¹ The average drive-thru order accuracy rate for human cashiers is 84.4 percent.²

Improving order accuracy at the drive-thru

Hi Auto accuracy

95%

Human cashier accuracy

84.4%

Labor shortages and high turnover create cascading challenges for QSRs

QSRs face a continuing, and worsening, labor shortage. QSRs averaged 26 employees per location in 2018, 24 in 2019, and 23 in 2020—an 11 percent drop. Turnover is compounding the situation at every level. Management turnover averaged 70.6 percent in 2020. Frontline turnover was even more dramatic at 169.9 percent.⁴

These two trends are making the normally high-speed, multitasking QSR workplace far more stressful. High turnover puts QSRs in constant training mode from top to bottom. Meanwhile, short staffing forces workers to assume more tasks. For example, a cashier may have to process drive-thru orders, serve customers at the counter, and run transactions at the pickup window.

“When you’re short handed, the stress level in the restaurant goes up,” says Chuck Doran, co-owner of 13 Lee’s Famous Recipe Chicken restaurants, including the first location to pilot Hi Auto. “Everyone is expected to do more just to take care of the basics. The customers don’t care that you’re short handed. I want my food, and I want it in an acceptable time frame, and I want it to be right.”

Staffing shortages create a vicious cycle. Shortages make the work environment more difficult, which fuels more turnover and discourages workers from entering the sector. Naturally, these labor factors degrade the customer experience, from order accuracy and service speed to the attitudes of servers.

Conversational AI lends a helping hand

Even with aggressive recruiting for new employees, executives and franchise owners at Lee’s Famous Recipe Chicken struggle to keep locations staffed at sustainable levels—there just aren’t enough applicants and employees to meet demand. The dilemma created an opportunity for Lee’s Famous to try a new technology—conversational AI from Hi Auto—not to replace employees, but to help keep the ones they had.

The Hi Auto system adds a new virtual employee that is dedicated completely to the drive-thru. After a brief, prerecorded greeting, the Hi Auto virtual attendant takes over the drive-thru ordering process. It responds to questions, understands accents, and keeps up with customers—even when they change their minds midsentence. Once the order is complete, the attendant thanks the customer and gives them their total.

“We don’t have customers waiting,” says Doran. “They’re greeted as soon as they pull up to the board. The order is taken right. It’s amazing the level of accuracy we see with the voice recognition technology.”

Hi Auto is integrated with the restaurant’s existing drive-thru, headset, and point-of-sale (POS) systems, so the order flows seamlessly to the order displays in the kitchen

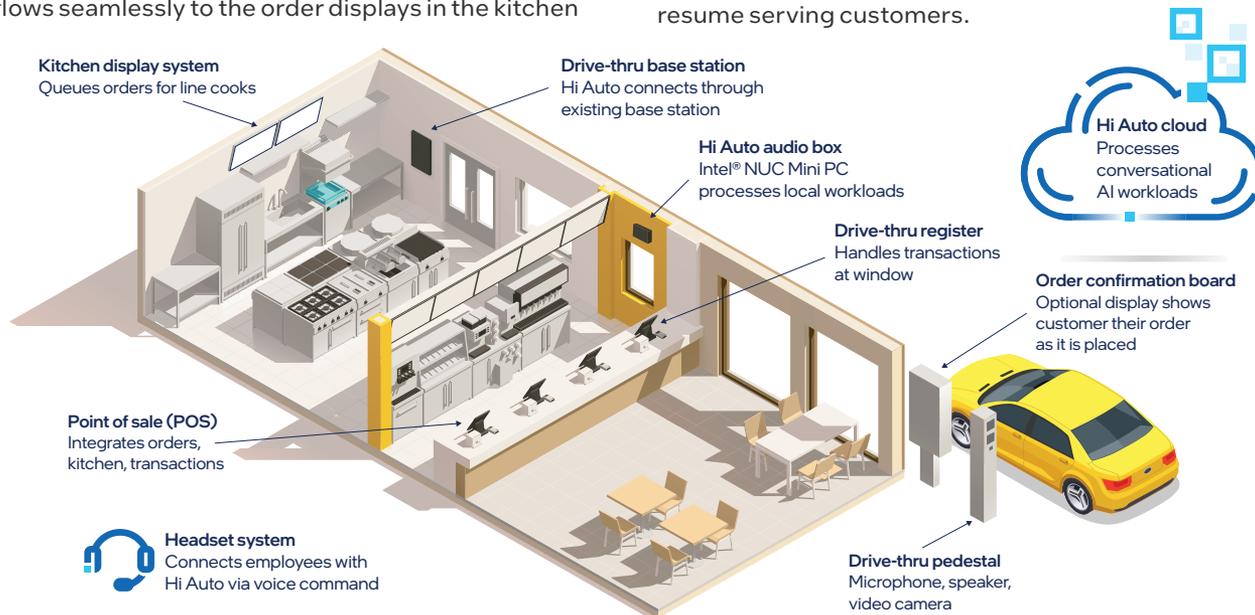
and the cash register at the pickup window. The Hi Auto attendant does all the things a human drive-thru attendant can do, but it doesn’t take away someone else’s job.

“Lee’s Famous Recipe didn’t engage Hi Auto in order to save labor,” says Bill Sparks, vice president of Operations and Franchise Sales. “We engaged Hi Auto because, like all other restaurants, we have a vast shortage of applicants. If every one of our locations used Hi Auto today, we would still be looking to hire 12 to 14 hundred team members.”

System overview: Hi Auto drive-thru

Hi Auto uses deep learning AI to filter noise, recognize human speech, answer questions, and engage in two-way conversations. Hi Auto runs on a small audio box—powered by an Intel® NUC Mini PC—in the back of the house that integrates with the existing restaurant speakers, microphones, and headset system. Natural language processing happens in the cloud on a Microsoft Azure instance powered by Intel® Xeon® processors.

The Hi Auto system integrates with the restaurant’s POS system. Orders flow into the POS automatically. Employees can use their headsets to tell Hi Auto when an item is unavailable or speak directly with a customer. When an employee intervenes, Hi Auto waits for the next order to resume serving customers.



Training AI on a complicated menu

Lee's Famous Recipe Chicken has an extensive menu with multiple options, from the pieces of chicken (breast, thigh, leg, wing) to the recipe (spicy, famous, oven roast) and multiple sides, desserts, and combinations. Customers can mix and match items any way they like, which creates even more permutations.

"People will pull up and say, 'I want your three-piece special with a crispy breast, famous thigh, and give me a strip in there,'" says Doran. "That's where the mistakes come. That was the first obstacle to overcome, that order accuracy point."

Initial training took six weeks of on-site collaboration and trial. When the first Hi Auto drive-thru launched, it hit 94 percent accuracy. Over the course of a few months, the Hi Auto team tuned performance to a remarkable degree.

"The Hi Auto conversational AI is more accurate than a human being in taking the order," says Doran. "It makes fewer mistakes."

Understanding accents and jumbled orders

Memorizing a menu is relatively simple compared to understanding human speech. People stop in midsentence, change their minds, and contradict themselves. If there's more than one person in the car, orders can turn into hard-to-follow conversations and disagreements. On top of that, Lee's Famous Recipe Chicken attracts a huge range of customers with a wide set of accents. The system has to understand American southern and midwestern neutral plus second-language speakers from around the world.

The Hi Auto system uses a series of custom-trained, deep learning AI models to filter noise, enhance voices, and process language in near-real time. The system mimics the natural rhythms of speech, including polite pauses that keep it from interrupting people. Hi Auto doesn't try to trick people into thinking it's human. However, its ability to comprehend complex speech and respond accurately allows customers to speak naturally and still get their orders right.

"As I was listening on my headset, I was thinking to myself, there is no way this is going to come out right ... because of the way the customer gave the order," says VP Bill Sparks. "I looked at the screen, and there it was—just beautiful. Hi Auto still nailed that order."

Hi Auto capabilities

- Filters ambient noise
- Converses naturally, understands accents
- Answers questions like, "What kind of fish is it?"
- Takes orders accurately, even when they're jumbled
- Enters the order into the restaurant's POS
- Handles out-of-stock items and gives customers wait times
- Upsells, cross-sells, and promotes new items
- Thanks guests and tells them their total

"Our average ticket has gone up in the drive-thru to the tune of about 2 percent."

—Chuck Doran, franchise co-owner, Lee's Famous Recipe Chicken

Automated upselling boosts per-ticket sales

Hi Auto automatically suggests sides, desserts, and drinks based on upselling routines developed by Lee's Famous. For example, if a customer orders a combo, Hi Auto asks if they would like a dessert. If they order an entrée, Hi Auto asks if they would like to make it a combo with a drink.

The implementation of upselling can be tricky because it can come across as pushy or out of touch with the customer's tone. To make sure automated upselling fits naturally into the drive-thru conversation, Hi Auto knows to hold off when it hears phrases like "that's all," "that's it," and other order-closing statements.

Automating upselling has a significant upside for the business. According to Doran, Hi Auto offers an upsell on 70 percent of orders and succeeds 21 percent of the time. Overall, suggestive selling has increased average drive-thru ticket sales by 2 percent with simple, friendly recommendations.

"We were only upselling about 4 percent of the time pre-Hi Auto," says Doran. "We went from 4 percent to about the fourth best in the company. That was all Hi Auto."

Conversational AI helps staff too

Hi Auto takes orders from the restaurant's staff too. Managers, cooks, and frontline staff can talk to Hi Auto anytime using their headsets to give the system updates about item availability. Hi Auto handles employee orders with the same natural ease as customer orders. For example, if an employee says, "Hi Auto, we're out of pot pies. We'll have more in 10 minutes," Hi Auto automatically tells customers that the item is out and asks them if they would like to wait. Hi Auto even calculates elapsed time so it can give customers a precise wait time.

A major win for customer service and employee morale

Hi Auto has been a major success with customers and employees at the pilot restaurants. Increasing order accuracy and reducing wait times are obvious benefits, but reducing employee stress has had an equally large impact. Employees now have time and energy to focus on helping customers, greeting them with a smile, and making them feel welcome—priceless qualities for a QSR brand.

"It's been a blessing on both sides of the window—the employee side and the customer side," says Doran. "It's helped lower the stress level in the restaurant because it's actually a full-time employee that is there from the time we open to the time we close. It doesn't call in sick. It's never in a bad mood. It's always there to greet the customer."

Eliminating stress and elevating the mood pay quantifiable benefits to individual locations and the Lee's Famous Recipe Chicken brand. "I've gotten a total of two customer complaints in the past three, four months," says Doran. "Our Google reviews have gone up. It's been an amazing addition to our business."

The drive-thru is just the beginning

Hi Auto is up and running in nine of Chuck Doran's 13 restaurants, supporting staff and providing friendly, accurate service in the drive-thru. As the system matures, developers see opportunities for Hi Auto to do even more.

Hi Auto integrates with the restaurant's POS system, giving it access to front-of-house order data, prep times, and sales. Hi Auto developers hope to apply AI to these data streams so that managers have near-real-time insight into bottlenecks and productivity. Future integrations with back-of-house systems—like inventory management, supply, and employee scheduling—could give the system access to the entire operation, all of which can be improved with the help of AI.

"Today it's your best employee," says Carl Nank, former VP Company Operations for Jack in the Box and Hi Auto advisory board member. "Tomorrow it's going to be your best shift leader."

"I'm all in," says Doran. "I can't get it into restaurants quick enough. We're at the very foundation of what this technology is capable of doing. Whatever we can do to advance this, I'm first in line."

Learn more

See coverage of the Hi Auto/Lee's Famous Recipe Chicken collaboration in the Intel Newsroom »

Watch a webinar – How Lee's Famous Recipe Chicken overcame hiring crisis with conversational AI »

Find out what AI can do for your organization

Intel and our partners are putting AI to work for restaurants, hospitality, and retail. Contact your Intel representative or visit intel.com/hospitality.

About Lee's Famous Recipe Chicken

Lee Cummings—the nephew of Colonel Harland Sanders—began developing his "Famous Recipe" chicken in 1962 and founded the first Lee's Famous Recipe Chicken restaurant in 1965 with his partners Maverick Long and Harold Omer. Today there are over 130 Lee's Famous locations in 12 states and British Columbia, Canada.

leesfamousrecipe.com

Spotlight on Hi Auto

Hi Auto is on a mission to deliver a consistent, accurate, and friendly sales experience for restaurants and their customers. They are pushing the boundaries of conversational AI with a market-leading, human-like solution that automates and optimizes the sales experience at drive-thru restaurants. They aim to improve operational consistency in restaurants around the world by increasing order accuracy, guaranteeing upsell opportunities, shortening wait times, and reducing labor costs.

hi.auto

"Customer complaints have gone down to nothing in the drive-thru."

—Bill Sparks, VP Operations and Franchise Sales,
Lee's Famous Recipe Chicken



1. Source: Hi Auto internal testing results.
2. Rachel Pittman, "Drive-Thru Accuracy Declines After Two-Year Improvement," QSR Magazine, October 2019. <https://www.qsrmagazine.com/drive-thru/drive-thru-accuracy-declines-after-two-year-improvement>
3. Amelia Lucas, "McDonald's is testing automated drive-thru ordering at 10 Chicago restaurants," CNBC.com, June 2, 2021. <https://www.cnbc.com/2021/06/02/mcdonalds-tests-automated-drive-thru-ordering-at-10-chicago-restaurants.html>
4. Danny Klein, "Status Check: Drive-Thru Continues to Pace Quick-Service Recovery," QSR Magazine, October 20, 2021. <https://www.qsrmagazine.com/finance/status-check-drive-thru-continues-pace-quick-service-recovery>

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