AI's product development potential

Despite challenges, AI shows promise

— BY JORDAN WHITEHOUSE —

Pumpkin spice. It's the fall drink flavour that keeps on giving. So, last year, when a North American beverage brand enlisted the help of food intelligence company Spoonshot to develop a new smoothie flavour, it also wanted to tap into all that pumpkin love. And what Spoonshot eventually came up with was this: papaya turmeric pumpkin spice. Strange as it might sound, it kind of makes sense. Papaya and pumpkin share about 75 per cent of their aroma compounds, as do pumpkin and turmeric, which suggests all of them go well together. Plus, consumer interest in turmeric has almost doubled over the last several years.

What may be most interesting about this new flavour, though, was that all of that reasoning and data crunching wasn't done by a group of food scientists or product developers — or any human, really — but by Spoonshot's artificial intelligence (AI) platform, called "food brain." Using data input from sources like food news sites and blogs, food science studies and journals, and market research reports, food brain suggests ingredient combinations personalized to whatever new type of food or drink a company may want to explore.

So far, Spoonshot says it has put its food brain to use for 16 different companies — most of which are in North America, such as Cargill — but Spoonshot is by no means the only one using AI to come up with new products. In February 2019, for example, McCormick announced that it was partnering with IBM to develop an AI platform that has since led to inventions like Tuscan chicken and bourbon pork tenderloin. Since then, McCormick has said that it plans to roll out its AI system in 14 countries, including Canada, which should have full capabilities by 2021. Companies like Nestlé Canada also say they are looking at it.

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The biggest tech company in this space, however, is New York-based Analytical Flavor Systems, which launched in 2013 and works with large, multinational companies all over the world, including in Canada. Its AI tool is called Gastrograph, and it gets tasters to input the intensity of certain qualities in a food, such as "meaty," as well as more specific impressions, such as whether that meaty quality is more sausage-like. It also gets tasters to rate the product, and it even collects data about the taster, such as demographic information and socioeconomic status.

All of that information is used to get at the highly individualized realm of flavour, and give food and beverage companies what they need to develop products that appeal to ever more specific tastes. "Today, in order to be competitive, you have to be targeted," says Analytical Flavor System's founder and CEO, Jason Cohen. "You can't build one soda that's going to go around the world — you can't even build one soda that's going to dominate across the U.S. The preferences have become so regionalized, everyone wants something specifically for them."

Hitting on those highly specific products, though, isn't going to happen with just the standard panelist model, adds Cohen. The reason being that it's virtually impossible to extrapolate the nuances of a particular population and what they desire from a limited number of taste testers, no matter how well trained they are. This is one often-cited reason why new products in the food and beverage industry are so prone to be misses. While the often-quoted number of 90 per cent of new foods and drinks ending up as failures is probably too high, this is still a hazardous, expensive realm. One recent estimate suggests that new product failures cost the U.S. food industry $20 billion per year. No wonder an increasing number of companies are looking at developing less expensive AI technologies in house or hiring the food brains of Spoonshot, Analytic Flavor Systems, and others.

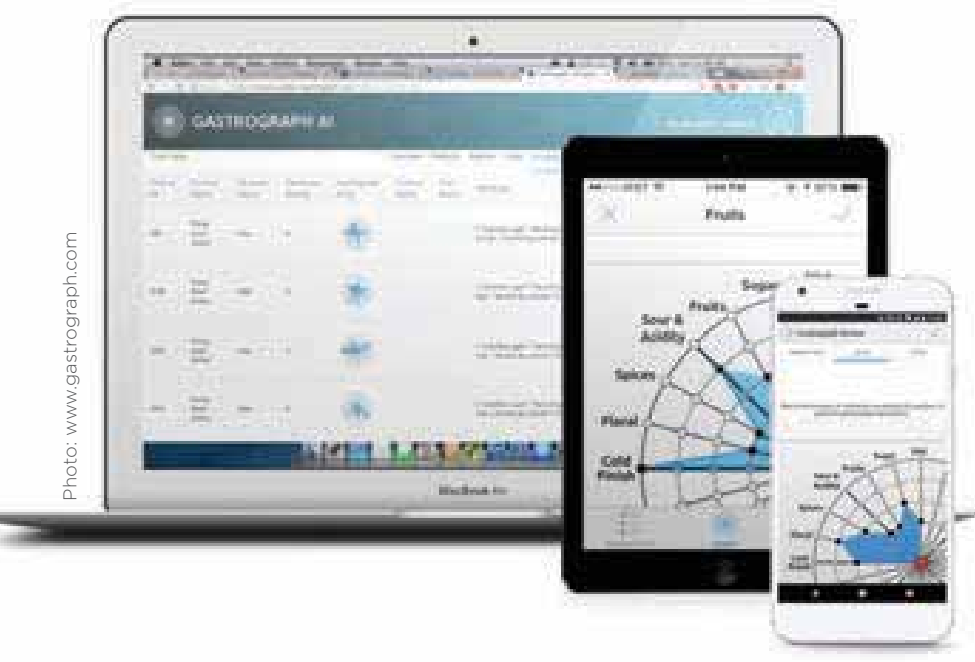

Photo: www.gastrograph.com

AI advantages

Another advantage of these technologies is that they have the potential to save companies a lot of time in their product development cycle. Take, as a made-up example, a company that has developed a new cracker flavour for the Canadian market but wants to make sure it appeals to Vancouver's Chinese population. Usually, that would mean the company would have to re-run its consumers tests in Vancouver to see if it works there. But with a piece of technology like Gastrograph, which might already have demographic flavour profiles of Chinese Vancouverites, the idea is that those new consumer tests won't be needed. Plus, over time, as more information is added to these AI platforms, they get better at predicting what other cracker flavours those Chinese Vancouverites might like. Or at least that's the hope.

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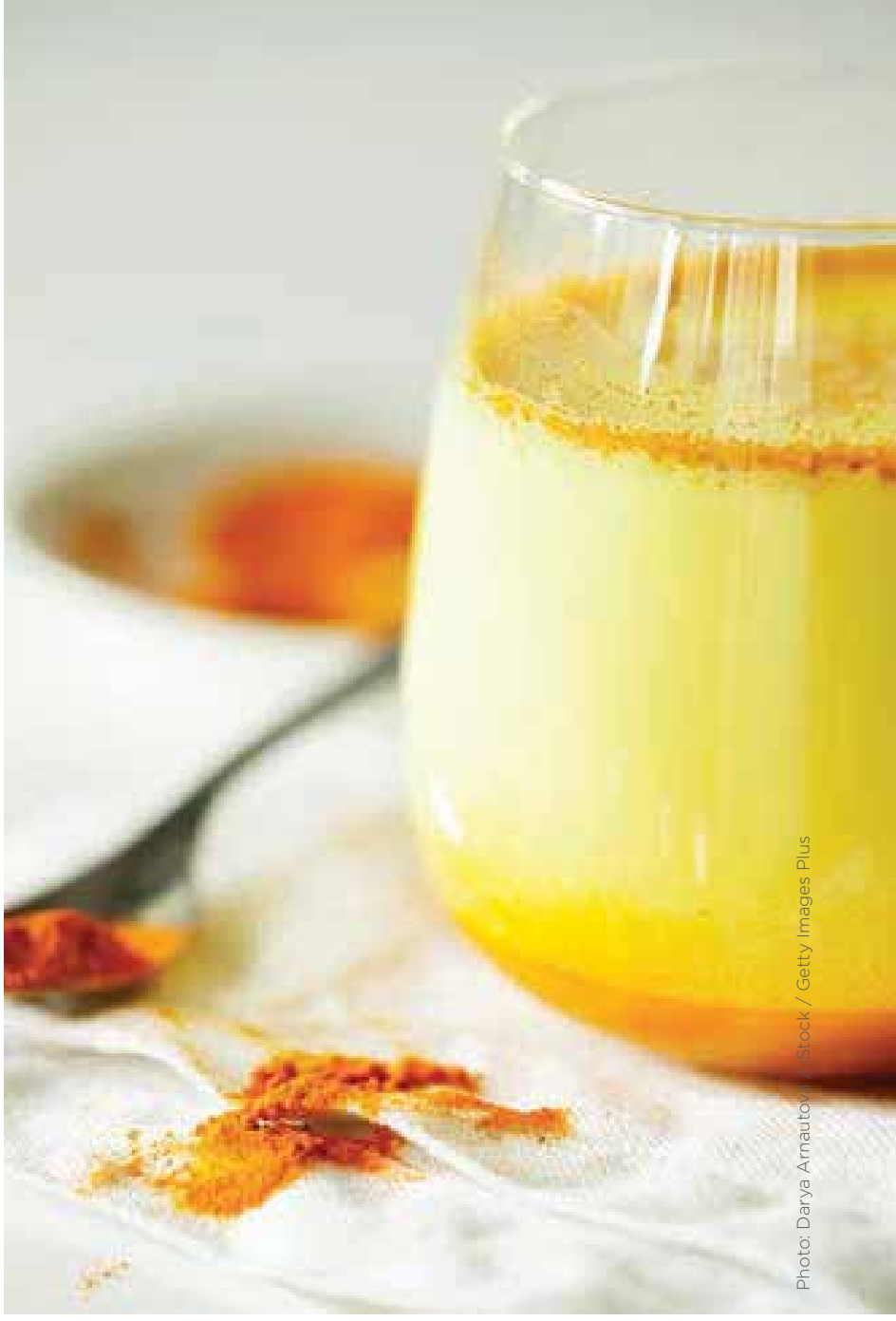
> *— Amy Bowen, research director of Vineland Research and Innovation Centre's Consumer Insights team*

Another hope is that AI can help companies tap into the more nuanced reasons people gravitate to particular products, says Amy Bowen. She's the research director of Vineland Research and Innovation Centre's Consumer Insights team. "Traditionally, this realm has been based on liking — how much do you like this product compared to this product? But what we're realizing is that there is more than liking that goes into a product being successful and being demanded by consumers. So AI, then, can help tap into the emotions, the values, the benefits that consumers are looking for in their product — sustainable, local, organic, etc. — so that companies can bring a product to market that's going to have everything the consumer is looking for."



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Concerns with AI

But as hopeful as Bowen is about AI to do all of this, she does have concerns. One is the often-cited "garbage in, garbage out" issue with any piece of AI technology. If a group of people doesn't want to give up information about themselves, then it's obviously going to be difficult to customize for those consumers. A second concern is that AI technologies may not allow for the development of completely new products. "When you think about a lot of the big, great innovations, they come from new ideas, they come from things that aren't there, they come from white space," says Bowen. "And so if we're always just going based on predictive behaviour, we forget about what's missing, what could be new, what consumers might not even know they're missing until you get it in front of them, and they're like, 'Yes, I need that!'"

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> *— Kishan Vasani, Spoonshot co-founder*

And then there is the personal information issue. Are we okay with giving up information about our ethnicity, our location, our gender, our race to yet another technology company in order to get foods and drinks that we should want? Analytical Flavor System's Jason Cohen answer to this is that they don't actually make predictions on the level of the individual. "Those predictions aren't: 'You need to sell John Smith this soda.' Those predictions are: 'These Hispanic-Americans from the southwestern U.S. are going to prefer these sets of flavours and these types of products that taste like this.'"

Despite these challenges, the future of AI in the product development sphere appears promising, says Bowen. "Everyone is curious."

Cohen agrees. "I think that we're still in the infancy of the AI cycle," he says. "And the same way that business intelligence was an overused term, the same way that big data was an overused term is the same way that AI is an overused term. So I think that there will be a bit of a crash or a bit of a winter, but on the other hand there is nowhere for it to go but up."

Mindshift needed

In order for that upward trajectory to really accelerate, though, there is going to have to be a shift in mindset by the decision-makers of the CPG giants, says Spoonshot co-founder Kishan Vasani. "They only have to look at their neighbours in the technology fields — the Googles, the Apples, the Amazons — to take a new approach and a new financial model to re-think the way they invest."

There is also going to have to be well-documented case studies around hit products that were the direct results of insights derived from AI technology, adds Vasani.

And will that papaya turmeric pumpkin spice smoothie be one of those hit products? Maybe.