

EPISODE 79**[INTRODUCTION]**

[0:00:10.3] SC: Hello and welcome to another episode of TWiML Talk, the podcasts where I interview interesting people doing interesting things in machine learning and artificial intelligence. I'm your host, Sam Charrington.

This week on the podcast features a series of conversations with speakers from the AI Summit in New York City. The theme of that conference and this series is AI in the enterprise, and I think you'll find a really interesting mix of both technical and case study oriented discussions this week.

Please note that on Wednesday, December 13th, we'll be holding our last TWiML online meet up of the year. Bring your thoughts on the top machine learning and AI stories of 2017 for our discussion segment, and for our main presentation, Bruno Goncalves will be discussing the paper; Understanding Deep Learning Requires Rethinking Generalization by Chiyuan Zhang from MIT and Google Brain and others. You can find more details and register twimlai.com/meetup.

Today, I'm joined by Brian Gross, head of digital innovation for the Mexico City-based airline, Aeromexico. Aeromexico is using AI techniques like neural nets to build a chat bot that responds to its customers' inquiries. In our conversation, Brian describes how he views the chat bot landscape, shares his thoughts on the platform requirements that establish enterprises like Aeromexico have for their bots and describes how Aeromexico plans to stay ahead of the curve.

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And now, on to the show.

[INTERVIEW]

[0:02:44.1] SC: All right everyone. I am here on the line with Brian Gross, who is vice president of digital innovation at Aeromexico. Brian, welcome to this week in machine learning in AI.

[0:02:55.3] BG: Hey, thanks for inviting me to your podcast.

[0:02:58.5] SC: Absolutely. I'm looking forward to to chatting with you about what you're doing at Aeromexico with AI. Why don't we get started by having you tell us a little bit about your background, how you got interested in artificial intelligence and how you're using it at Aeromexico.

[0:03:13.7] BG: Yeah. My background has always been in delivery channels even before the Internet. So back in banking we had electronic banking, then we did the studies for Internet banking. So we're talking the late 90s here. Giving away my age a little bit. But delivering services over the web.

Then I was at AT&T back in 2010 around then doing consumer cloud services. So we're developing more things like music storage and photo storage in the cloud. Those products — Honestly, they didn't really take off, but it was an interesting exploration of the cloud right at the beginning there.

Then about four years ago through various contacts, I came to do consulting study here at Aeromexico in Mexico City. I am from the United States, but I've been down here in Mexico City for four years. It's is a very interesting company. It stayed on for almost 3 decades and there

was a lot of interest in modernizing the company on all fronts. So they had a bunch of new blood come in in 2013, 2014, and I came here and did an analysis of what needed to be done.

From there they ask me stay on and do a complete digital transformation. So we did new website, new app, new kiosks and all of that had an API underlying it. So all the business logic of the airline like flights, prices, check in and stuff like that became for the first time uniform across all these different delivery shops whereas previously they were separate black boxes.

So this had a huge impact, and you're talking about an environment which is very far behind a place like United States or Western Europe in terms of digitalization, people purchasing tickets online. So we went from about one quarter of, let's say — We call that the penetration rate. How many people buy their tickets on our direct website. Went from about one quarter what you would typically see in the U.S. to about now we're about one half of that index. So we've made tremendous progress over those years.

Then once that set of project was mature back in the beginning of 2017, my boss asked him to start an innovation area and said, "Look. The definition is completely open." So we have a bunch of initiatives in parallel, but one of the ones that we start focusing on was messaging platform, so Facebook Messenger, WhatsApp, which is really big in most parts of the world outside the U.S. Yeah. Here in Mexico, WhatsApp is absolutely everything. You use it to talk to your friends, your family, professionals, whatever. You're constantly on WhatsApp, but Facebook Messenger is also that.

These platforms which started to open up for more famously chat bots, but I think more broadly and more importantly, delivering customer service and to some extent sales over those channels. So we really started focusing on that, and that's the origin of the presentation, the story that I'm going to share.

[0:06:10.8] SC: You mentioned the presentation this week connected around the presentation that you're going to be doing at the AI Summit. I'm curious, when you think about chat bots and using them for customer service, are there any companies that you think — Who's your role model in this space? Who's doing it really, really well?

[0:06:32.6] BG: Well, I think all of this is really, really new. I mean Facebook only came out with the chat bot platform for Messenger back in April of 2016. So people are still exploring. There is no real best practice. If we look, we're lucky though, because in the airline world there is KLM out there who's very innovative on many different things, and this is one of them. They were the first ones to come out with an airline chat bot, so we kind of looked at what was going on with them.

But if you look at like the vendor space, it's still a real mismatch. You have some of the big players like IBM, with Watson and so forth. You have a lot now of the big digital agencies and consulting companies that will tell you that they can deliver this, but there's no mature robust model. I mean we have ours and we're really happy with what we've developed, but we're working with the local startup here at Mexico City called Yalochat, and there's really brilliant and slightly — Together we've developed kind of an ecosystem around messaging that includes AI that's really set to do amazing things in customer service.

[0:07:33.9] SC: When you think about kind of this ecosystem in AI, what are the other things that you're doing beyond the chat bot that you kind of put in AI bucket or are there — To what extent are you — I guess I don't want to throw in too many questions at once. Why don't we start with the full breadth of what you're doing kind of under the AI banner?

[0:07:55.4] BG: Yeah, exactly. Good questions. Talking about this ecosystem or platform around messaging, there's maybe half a dozen elements to that, and the chat bot is really only one, because after all chat has existed for I don't know how long. Probably a decade or longer, there's web chat. We have on our site, still, we have this web-based chat that it's just an interface for sending a message back and forth to an agent, So nothing AI about that in the least. It's just saying chat bot doesn't make it AI, but you have the chat bot interface. You have the neural network, which is really where the AI comes into play, and this is trained, so we trained ours on four months' worth of chat Twitter data which allows the customer to ask any kind of question. They can phrase it anyway they want, and then the system is smart enough to pull out the intent from that question and then match it with one of hundreds of answers that pretty much is like a database type list. So that's another important element.

Taking it back a step and looking at it at a higher level, what services are we providing on there? When you go in to our chat bot or our messaging interface, I should say, it's actually going to guide you based on intent down one of three paths. One is, yes, you can ask that open question and the AI will pullback one of hundreds of answers and help you along your way. We don't pretend that this is super future. It is where it is right now and that means that we can give you hundreds of good, but simple answers. Any complicated definitely will go to a human agent.

Then we have option number two, which is human agent. So that will be if we can't answer your questions from the neural network or simply if you type in the word help, it will give you the human agent. Then the third one is if we detect that you want to do a certain task. We have predefined tasks, like search for flight, track the status of the flight. Is it on time or whatever. We have recommendations for hotels and sightseeing in our destinations. We have notification, so you can get push notifications about the status of the flight, and we have a couple other of things.

Then you go down this kind of predefined path where you're not asking open questions. It's just very much preprogrammed, and that kind of chat bot interaction has also existed for some time in this mixed space. Then there's also a trick of making that work together, right? So if you're passing up to the human, the human takes the session quickly, attends to it. Puts them back in the default mode which will send the chat bot again. Those kind of apps are also important to sketch out and implement.

[0:10:32.9] SC: Can you talk a little bit about what some of your goals as a business are in going down this path? You talked a little bit about for your website, kind of driving consumers to book tickets there. As a bit of a travel geek, I know that there are — One of the drivers for airlines in doing those types of things is to reduce commissions that they pay out to third parties. Are there similar motivations here? Is it based on quality of service? What are you hoping to achieve?

[0:11:05.5] BG: Yeah. That's really changed a lot. We have the luxury of having this innovation area that I head up, and they give me a bit of latitude. So I don't have to go after hard and fast business goal with some of this emerging technology.

So back in 2016 in April when Facebook came out, everybody was saying, “Oh, this is great for booking tickets, so, so, so.” We had that life for a year and we were just seeing that no one was buying tickets. I don’t want to say the numbers, but it’s very low, the actual number of tickets. But a lot of shopping, a lot of questions, and we really saw those questions take off. People loved it when we had an FAQs, and then we added the neural network. That was in the spring of this year. So when we added the neural network, we saw that take off.

We saw that people wanted to use this channel for customer service, and it made sense. Looking back with 20/20 vision you could say, “Yeah,” You could have figured that out all along. Realistically, we weren’t experts in this. We saw that customer service is really the user case for this, and also people shopping for ticket. It’s perfectly fine with me if people want to shop for tickets on the chat and then we direct them to the website.

We’re also in a market where a lot of people want to be attended to personally. It’s a very different culture from the United States. You have people that simply — They don’t have 10 years of history of using Amazon and eBay and all of these stuff. It’s not in the culture. So if you want us to transfer — If they want us to transfer them to a human agent, I’m perfectly happy with that too. That’s also direct sale for us. No commissions, etc., and that’s what we’re working on as well. So we want to extend this platform to our call center personnel who will start picking up the chat, writing a payment solutions so that people can pay safely on their smartphones while they’re chatting to that agent, and the agent will never see their data or anything like that.

Yeah, it’s a lot different functions that work on the channel, but is not actually looking booking a ticket right with the chat bot. It’s almost everything but net.

[0:13:12.5] SC: Okay. I think if I’m correct, the airlines have a term for the number of people that are shopping versus actually buying tickets. I think it’s the look-book ratio.

[0:13:26.3] BG: Yeah, correct.

[0:13:27.7] SC: What you found in looking at the chat bot is pretty typical for other types of booking experiences as well. The number of tickets relative to the number of tire kickers, if you will, is pretty low. Is that right?

[0:13:43.4] BG: Yeah. That's absolutely correct, and that's what's happening on mobile anyway. So even when you have an awesome mobile website, that was actually the first thing that we did when we redid the website, was we said it had to be responsive and the mobile experience has to be as good as the desktop experience. Even then, we're seeing around 10% of our direct digital sales coming from cell phones even though the traffic is approaching 50%. From what I know from the U.S. market, that's also typical.

Now, the stats that you can actually get out in public are mostly about hotels or they come from China. So you're starting to see like things like 30% of flight bookings in China supposedly are coming from mobile. Most of the hotel bookings, but in North America, we're still the 10s.

I'm kind of okay with that as long as we don't lose the customer. The problem is the customer that shops on the mobile and then doesn't come back to us when they come to the desktop. So that's why we do want to keep trying to capture that payment. Mobile website is another story, but here on the chat bot, that's why bringing in the human agents who can close the sale and then there's a safe secure payment method and convenient on your cell phone. So we can close that sell out and make sure we get that sale and not an online travel agency.

[0:14:58.4] SC: Right. You mentioned that you're — And I forget the metric that you said. Whether it was usage or kind of the experience increased significantly when you brought the neural network online. Can you elaborate on that? What exactly was it about bringing on your own models that you train that fundamentally changed the way people use the messaging experience?

[0:15:23.4] BG: Yeah. When we first rolled out the chat bot in September 2016, we only had an FAQ section. So it was limited to certain topics. Yeah, like luggage and where do you fly and things like that. So it was very static and the chances that we would actually address the question that you had were relatively small. Now you can literally come into the chat bot and ask anything and will give you access to hundreds and hundreds — Basically, any information we provide over the web, and then some is available on the answers.

[0:15:54.9] SC: Okay. I've talked to a number of companies that are either on the provider side of chat bots or the customer side, such as yourself, and there are a number of commercial chat bot platforms out there. Are you using one of those? It sounds like you're not. That you've got something that was developed from scratch by the start up or —

[0:16:21.8] BG: Yeah. I think that the market is still developing in that sense. So if you're looking at the needs of a large corporate customer like an airline, I have not seen anybody out there that has a complete solution that has all of these elements, Again, that's the chat bot, the AI, neural network, the human agents, the front-end for the human agents, the backend integration into your sales force or your other CRM. All of these elements together, nobody actually delivers that in a package right now that I am aware of. Now, if someone can contact me and correct me, but we've done a lot of market research into this and there's hundreds of chat bot providers that can provide you a chat bot. When we started looking into even some of the best of these, some of the real big names that I don't think I should name on a podcasts, but some of these names that have been around for many years are still literally selling you just the interface for someone to chat to a human agent, right? I think I just would never start a project like that in 2017, because where is your plan to have all those other elements I'm talking about? It's fine and dandy to have human agents, you need that, but you need all of those other elements in there.

A couple of those big names both global and regional either provided that or there was another one regional here in Latin America that had table-driven questions and answers. So instead of AI and a neural network, you would actually type in the questions and answers yourself and then they would help you out by adding some grammatical variations for conjugations and stuff like that, but basically it was table-driven. So you're also talking about old technology. Then you get other people come in to visit you and they've got elements. They've got AI platforms, but they don't have all the other elements and integrations built out and they'll gladly charge you hundreds of thousands of dollars to do that. I think it's a huge opportunity particularly for startup.

I think for this one here in Mexico, Yalochat, but also other ones around the world to come with a full package. If you come to someone like me in a corporate, they don't necessarily know that they need this all. We've discovered this and built this over a year. So I think this is something you could take, kind of copy-paste that whole modular concept and start selling it out corporate.

I'm sure we'll start seeing that in the next year or two. Just like you have companies that do that for e-commerce for you. You'll have that for messaging.

[0:18:42.1] SC: Right. Do you know if they're using any off-the-shelf pieces on the AI side of things?

[0:18:49.0] BG: Yeah. No. We actually built the neural network custom, because the idea was — Well, we built it with a company out of L.A. called iv.ai. I want to give them credit, because that worked out also very well for us. The reason that a tailored approach was chosen was a particular — The type of content, right? So this is not only Spanish. It's not only the variety of Spanish that's spoken in Mexico. It's the way that people express themselves when they're asking questions relating to our services, and that varies — That's so different from even other verticals within Mexico that you have to have historical data. This was done on a custom basis.

[0:19:29.6] SC: And did you evaluate platforms like api.ai and others and found that they couldn't handle those particular issues for you?

[0:19:39.8] BG: Not me personally. No. So I depend on Yalochat for that, and this is what they told me. This was a bit what they told me about their internal decision-making, but we relied on them for that choice.

[0:19:51.5] SC: Got it. All right, great. Then where do you see AI going at Aeromexico?

[0:19:58.0] BG: It's actually the main focus of our innovation area. So I should mention the innovation area I'm in is within the commercial and customer service area. Not really in the operations. I'm not looking so much at how people — I don't know, pastor security gates or things like that. I'm looking a lot at distribution and customer service solutions, and AI has the ability to help us automate, but optimize more than anything a lot of different areas.

One completely different application would be in our marketing area. We have the ability now, we have all the tools in place to send people absolutely individual email for millions of millions of people getting a different email. But there's actually — A lot of people say they have this, but no one can actually help you construct that email. Okay. We have all these data about you in our

CRM. We know all your personal data, We can segment you, We can guess at your income. We know your geographical location. We know what you've bought from us before or haven't bought from us, and we also have stuff, product that we need to push. We have routes where there's a lot of seats available.

How do you combine all that into millions of different email? No one has a way to do that. Really, that's not necessarily AI to compose email. You need some powerful machines to do that, but then you execute the campaign, you analyze it and then you go ahead and you do better the next time around. Now that is machine learning, right? I think only machine can bring us to that scale.

So imagine the power of email marketing where the response rate is four or five times or maybe even 10 times what you had before in these generic things. It's not just email. We also have the ability to do different website for each individual with a tool called Optimizely. We have our digital marketing where we put out our ads. Now, those are already highly tailored because the ad vendors provide a lot of tools to segment and target markets and even individuals. But having the CRM data directly feed into what we request from those advertisers makes it still much more powerful. So that's another area, but we can go on. Basically, harnessing all these fast data, big data, which is such a buzzword, right? But how do you actually do that? So that's another area of focus.

[0:22:20.9] SC: Do you see this happening via a portfolio of essentially independent projects or do you see the evolution of a platform that provides some core sets of AI services that neither of these different teams can use to build AI and to the things that they do, like the email marketing, customer service, etc.?

[0:22:46.9] BG: That's a really thought-provoking question, because I'll tell you, the one company that has made their presence known a big way is Google, right? They have this data platform and data crunching where you can pay as you go. It's a very attractive option that everybody immediately got excited about. I'm sure there're actually competitors out there that have similar products. Honestly, we haven't looked into that into the competitors a lot of depth. So definitely a platform will be there, but what's definitely missing is that strategic direction.

We don't want to pay millions to some major consulting company to give us direction. That doesn't make sense. There should be — I think we're going to coalesce around common sense directions that big companies have to go in when it comes to an AI strategy, but I don't think we're there yet. Not at all. I haven't seen that. So I think for the moment we're still in the phase of investigating in a very individual way the problems that we want to solve so that that's not knowledge that is prepackaged or readily accessible. I think that's why we'll see a lot of individual projects even though we might all be, yeah, on the same sort of big data platform as a tool.

[0:24:00.7] SC: These types of platforms can be vendor delivered or can be an internal platform that's developed at Aeromexico kind of for its own specific use cases. It sounds like you're still at the stage where you're identifying use cases to experiment with and use them as learning opportunities. Is that a fair assessment?

[0:24:25.2] BG: Yeah. That sounds about accurate. Also keep in mind that we're about 1/10 the size of large U.S. airlines, right? In digital we're about 50% of the penetration that they have in terms of online sales. Our budgets and our staffs are commensurately smaller. Normally, we would be looking for solutions to kind of thought to coalesces in the U.S., start to be implemented and then that stuff comes trickling down to Mexico.

The fact that we are pushing ahead on these individual products starts to give us a vision of maybe we're ahead of the game certainly in Mexico as to where that vision is going to go around platform and strategy for AI as a — Yeah, as a layer that goes across the business. That's a really good point.

[0:25:11.7] BG: Yeah, and I think that's characteristic of companies, many, many companies in the U.S as well. You mentioned an AI strategy. Is that something that — Do you have an articulated AI strategy at this time at Aeromexico?

[0:25:26.3] SC: No. I think you're catching us in the phase where we're starting to look at where can we apply this across the different things. Like I gave your marketing example, but we're right in the middle of starting to sketch, looking at customer service, customer experience, which is your whole end-to-end travel experience, marketing. What else do we have here? Basically

everything in the commercial sales, of course, and how we deal with our agency customers and how to deal with our online travel agencies, how we deal with distribution in general, meta-search and stuff like that. There's opportunities there I think to optimize processes and do new things with AI and we're starting to look at all those and make an inventory and see where we can get the most bang for the buck in our next few projects.

[0:26:13.3] SC: Awesome. I imagine this feels a little bit like when folks are starting to grapple with mobile and trying to figure out how that all is going impact things and you know what's the right place to start and what are the right tools and technologies. Are there any lessons that you kind of bring from previous waves of innovation to the way you're tackling AI?

[0:26:39.6] BG: I think that's a really good analogy. I haven't thought of that. Remembering back a few years, I was very frustrated that you would read even sometimes very reputable mainline publications, stuff that just confused all the different aspects of mobile, right? What's mobile? Mobile payments, like does that mean when you're buying something on a mobile website or does it mean you know when you're tapping your phone someplace, right? You'd get all these people that would mix that all up together and misuse that in fact to sell services and consulting. I think this is the same thing. You got to have an expert within the organization of this case, that's me, who's filtering through all the noise and say, "Okay. What is it that this really does?" We've determined that this is really about optimizing — Well, in the cases of things like marketing, it's about optimizing outputs, optimizing execution of processes as well as some other things, but knowing those things very clearly and what you're trying to achieve with that and not just taking a technology and trying to find a solution. What do you do? A solution in search of a problem?

[0:27:47.9] SC: Right. Exactly.

[0:27:48.6] BG: Yeah. In some sense we did that like when chat bots first came out. We just got on board and started playing around for a few tens of thousands of dollars. Basically, we were able to experiment, and that's valuable experience and everybody should try and have that innovation area that's able to do that, because it helps you sort out like what's really going on. What is this really for? In parallel, yeah, building up a strategy where you're like, "Okay. What do I want to achieve with this?"

[0:28:14.8] SC: Right. Awesome. Brian, I really appreciate you taking the time. Is there anything else that you'd like to leave the audience with?

[0:28:23.1] BG: No. I think you hit upon a lot of the main points. It's really good. I just think this is an exciting time to be in AI. There's a lot of discovery going along. We're in the process of these solutions, like coalescing it to kind of a common sense across companies. This is what we need to do. These are all elements that go into a messaging, a chat and AI platforms. So it is great to be part of that and I think the audience and the conferences are all going to be having different roles in that. I'm also looking forward to learning from all the other presentations at the conference and all the other applications of AI business that that we can hopefully apply some of those here at the airline.

[0:29:01.6] SC: Fantastic. Thanks, Brian. It was great chatting with you. I appreciate it.

[0:29:06.1] BG: All right. Thank you, Sam.

[END OF INTERVIEW]

[0:29:11.7] SC: All right everyone, that's our show or today. Thanks so much for listening and for your continued feedback and support. For more information on Brian or any of the topics covered in this episode, head on over to twimlai.com/talk/79. To follow along with the AI Summit Series, visit twimlai.com/aisummit. Of course, you are encouraged to send along your feedback or questions to us either by leaving a note right on the show notes page or via Twitter @twimlai or @samcharrington.

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Thanks once again for listening, and catch you next time.

[END]