



Episode 9: The role of data science within insurance claims

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PARDEEP BASSI: Data science in this context is the conversion of data to action via machine learning. So machine learning is a technique to build models in an automated manner which allows you to make better and more efficient decisions.

SPEAKER 2: You're listening to Rethinking Insurance, a podcast series from WTW, where we discuss the issues facing P&C, life, and composite insurers around the globe, as well as exploring the latest tools, techniques, and innovations that will help you rethink insurance.

TOM: Pardeep, welcome to the Rethinking Insurance podcast series, and welcome to Willis Towers Watson. I think you're about three months into your role here, right?

PARDEEP BASSI: Hi, Tom. Yes, three months in, and it's very exciting. Been here just over three months actually, and it's quite reassuring to meet some really great people, including yourself. And I think we're heading in a very, very exciting direction, so keen to have this conversation.

TOM: Excellent. Thank you. I appreciate you joining us. So perhaps you could start with just telling us a bit about your background and where you've joined us from.

PARDEEP BASSI: My background has been data science. So I've been in the insurance industry P&C for over 10 years now. So I've worked at AXA, short stint at domestic and general, and LV is part of Allianz group. So my last role I was the chief data science officer at LV, leading the machine learning implementation, build and implementation of all machine learning models across all functions with quite a large focus in the claim space.

TOM: OK, well, that's great for today's topics. So we're come on to that and get your views around claims. So just before we get there, just tell me a bit about your role, your new role within Willis Towers Watson's insurance consulting and technology business.

PARDEEP BASSI: Great. Yes, so it's a global proposition lead. So I get to work with our technology team to build the software we need specific to insurance and then work very closely with our consulting teams as well to take that out to market and make that bespoke for each region. So a mixture of both software and consulting, the best of both worlds hopefully.

TOM: Absolutely. OK, and we might dig into that a little bit further in this session, just to get a view as to where you think the technology is heading, some of your goals, and how you think that's going to influence some of the insurance claims operations out there. But let's just sort of pick up around that claims piece that you mentioned.

So obviously in this podcast, we're specifically focusing in on applying data science within the claims operation. Can you just talk a little bit, Pardeep, about your experience of applying data science in claims and what kind of impacts you've seen that it can have?

PARDEEP BASSI: So I think it's worth noting that the claims space is very different to other functions within the insurance setting. So applying advanced analytics has been the focus of the pricing and underwriting world for quite some time, and now it's becoming more and more relevant in the operations and claim space, but there is a subtle difference in how it's used, the impacts on the customer, the internal employees, as well as the bottom line. But the good news is, and I'll come on to this in more detail, is there's huge benefits.

Let's start with one of the impacts, which is slightly different to the traditional place in which advance analytics is applied in insurance. So firstly, the customer. There's huge benefits in terms of providing a better service to the customer, whether that's a more tailored experience, a faster experience. And you could see all of those benefits come through by the speed in which you can settle the claim, your NPS score. So building machine learning models to help the customer is something which is very high in terms of the impact of the models that you build within the claim space.

The second, which I'm going to take this in a slightly different angle, is just the impact on the internal organization.

TOM: Yep.

PARDEEP BASSI: So it's a new way of working, and machine learning is almost-- can be thought of as a tool, a super power of the claims handlers and the claims teams to help them make better decisions. So there's a whole benefit and impact to the actual claims function itself. People can upskill, new roles will be created, and people can do their existing roles and their existing measures of success can be hit, and improvements can be seen in terms of the impact on the customer and the bottom line, which is a measure of the function.

So massive internal benefits. And thirdly, which I think we're all interested in, and ultimately, we are here to make money. So the bottom line, it can be vastly improved, huge, huge financial benefits by applying machine learning in the claim space. So I'm going to come back to the comparison and the relative importance people have traditionally placed on claims versus pricing and underwriting.

And I think that balance is equaling out and potentially even shifting towards the claim space. And I say that because there are two parts to the equation, the loss ratio equation. And if you can reduce your claims cost, there's significant value to be had there. And it's an area which many insurers haven't really applied much advanced analytics to before. So there's quite a bit of low hanging fruit, as well as the longer term strategic approach of influencing every single decision and seeing that multitude of small enhancements having that impact.

So there's a big, big focus on strength through claims processing, which is great, and it does work. But I think the real interesting part, which I've seen, is the evolution of the sort of trading environment which has been created with third parties, converting third parties, competing with other insurers. The claim space has turned into a trading environment in my view.

TOM: Absolutely, yeah. Absolutely, the trading environment between insurers and third parties around how the claim is going to progress and who's going to handle the actual claim and deal with which aspects of it, yeah, absolutely clearly been a big part of the trading piece as you say. Let's take a step back.

So for anyone new to data science who may be listening in to this podcast, can you explain in simple terms what do we mean by data science? How does it actually work and what is the value that it's actually bringing?

PARDEEP BASSI: Data science in this context is the conversion of data to action via machine learning. So machine learning is a technique to build models in an automated manner, which allows you to make better and more efficient decisions. So in this context, it's very much-- it's a tool for you to make your existing decisions better and potentially identify areas of concern or opportunity, which you haven't previously. It's a facilitator to do what you're currently doing significantly better.

TOM: And so how does it do that? It looks across different data sets and teases out insights that are kind of not necessarily obvious to the human eye? Is that the kind of capability that you're bringing to bear here?

PARDEEP BASSI: So if we focus in on machine learning slightly further, there's two different types of predictive models that you can build. One is supervised learning, where you're using the past behavior, and you have a response, and you use the past to predict the future, where you can use as much too much data as you have available. You, can enrich that with various data sets, and then you point your machine learning algorithm which looks at how best can you predict the outcome you're trying to measure and improve.

And the model will do that by some input from human domain expertise of saying create custom features which allow you to ensure as much human thought process and knowledge which is built over how many years is taken into the model build. But the model will also look for intricacies and that deeper level of differentiation, which isn't really something you can think about at a human level.

So I think a simple way to think about this is we're all relatively familiar with Excel and if statements. What we usually do prior to machine learning is probably work in the space of one or two if statements. What machine learning does is it will help you build a model with a deep, deep number of layers of if statements, so you could have 10 to 15 different layers, and that's not something you can easily interpret or understand or come up with yourself. So it mixes the human domain expertise with allowing the model to go and find those small differences.

TOM: OK, that's great. That's really helpful understanding. So I mean saying the obvious, I need some data to start with if I'm going to go on this journey. Do I have to have gold standard data to be able to get going with these kind of solutions, this kind of technology? How do I go about looking whether my data is right for this kind of approach?

PARDEEP BASSI: So I don't think you need gold standard data. It's ideal, and it definitely helps, but you can always use what you have to start. And I think an interesting example based off previous experience was which data is captured at the point you make the decision. So I think data capture, storage, centralization is very important, and having that really high quality of data will obviously give you a better outcome.

But you can always build models with understanding of the strengths and weaknesses of the data you have. So a model is better than no model is the phrase to use. But if you can continually improve

your data as well as build an initial model, that gives you a good starting point and a good natural evolution.

TOM: And I presume in some of your work what you've done is joined different data sets together in claims, right? And you found that to be valuable along with some of the unstructured data?

PARDEEP BASSI: Definitely, definitely. So I think most of the listeners here will know. I think claims has used a lot of external data already that this may not be widely appreciated. But integration into third parties, auto trader information, demographics, sociodemographic information, various other vehicle information, claims is already using a lot of external data. Machine learning allows you to better link all of that together and help you predict the outcome.

TOM: Now what about the unstructured? Because obviously in claims there is quite a lot of unstructured data. So how can you leverage that unstructured data to augment your insights and machine learning outcomes?

PARDEEP BASSI: So what I've seen is quite a few of the claims-specific models are heavily driven by the unstructured data. So this is information captured during the conversation with the customer. What's worth understanding is the quality of this data is as important as we stated, but it's also what questions you ask.

So you may have an initial set of data, which is captured possibly by text as you're speaking to your customer, and you can use that to help make a prediction and influence an outcome. But there's a loop here where you could evaluate that and say these key phrases are the most important, and you could potentially even change the questions you ask your customer. So I think there's a short term and longer term play when it comes to unstructured data.

TOM: And data science itself plays a role in turning that unstructured data into something, which is more structured and therefore kind of added to your other data sets that you've got, kind of provides a richer set of insight that the machine learning kind of leverages across those layers that you've described there. Is that correct?

PARDEEP BASSI: Yep. That's exactly right, Tom. Machine learning data science allows you to leverage this data, but there's also a very important aspect which you shouldn't forget, which is the application of domain expertise to help translate that data into something which actually makes sense. So I think this is a perfect example of where you need that insurance claims domain expertise working very closely with your data science machine learning experts in the business to create an output and a modeled approach, which takes into account the benefits of both the domain expertise and years and years of knowledge, as well as the compute power and the algorithm development that you've got within the machine learning space.

TOM: Yeah. So it's about bringing together a multi-disciplined team, leveraging the claims knowledge and capabilities that you already have together with the analytical capabilities and data capabilities. Is that what it's all about really?

PARDEEP BASSI: Exactly. So I think you need to understand the problem with the hat of a claims handler, as well as a machine learning expert to say how best do you build the model based off of the data you have, the problem you're trying to solve? How do you then implement that model? Do you integrate it into an existing system? Do you provide an output, an additional output?

How do you then monitor that? How do you then ensure that you take that suggested insight and outcome and how you tailor that with people actually on the ground operational staff and combine

that together? How do you monitor that to ensure continued success? How do you have a look at from a regulatory ethics perspective that you're happy with the decision you're making and the data you're using to make that decision?

There's many aspects to it. And it's something we can really help with here, Tom, which is to define that operating model.

TOM: Yeah. Does data science work like magic immediately? Is it like, OK, right, I've done it and it's great, or is there kind of some time that's needed to kind of test and learn and deliver the right outcomes?

PARDEEP BASSI: It's a mixture of the two. We do have to appreciate that this isn't just a magic pill which will solve all of your issues. There's quite a few decisions, where they're relatively low hanging fruit, and you can have a significant impact. But it's that longer term play of every decision being improved by a small amount, which has that ultimate business transformational impact.

Let me run you through an example that I've had before. One of the first models I built in the claim space, we improved the accuracy, which I'll use in a loose way, of the decision from 70% to 80%, which is amazing. You come in, and you improve the decision by a significant amount.

But relative to the expectations of the business, there were genuine questions, such as why is this not perfect? Why are we not making this decision 100% accurate all the time? And it's that understanding of machine learning will not give you that perfect answer. Every data has its strengths and weaknesses. Each individual algorithm that you build and how you build it will have strengths and weaknesses, and it's that understanding of how best to leverage it, as well as how best to apply it and integrate it, which gives you that result. But it's not the absolute all encompassing, magic solution.

TOM: So in some places, you can-- it gives you a really good strong answer, and those are kind of areas where you can start looking, OK, well, I can take those down the intelligent automation route, and then there's others where it's providing a really useful response to a human, a claims handler, to help them where their decision making. Are those the kind of two routes that you kind of push the response now basically?

PARDEEP BASSI: Exactly. So there's certain elements of existing processes which cannot be fully automated by machine learning. But there's potentially even more, which can be influenced, and it's that mixture of providing a suggested route, a suggested outcome, or steering a decision or highlighting certain information, and then inputting that into the decision a human claims handler makes.

TOM: OK. And so some of the investment that I'm going to need to make here is around technology. So what's the kind of technology that I need to be thinking about, and how do I get this integrated into my current claims workflow, claims systems to make this a success?

PARDEEP BASSI: From a technology perspective, we can talk about this in two broad categories, so building your models and then integrating it. And yes, there's a third category of monitoring and ensuring continued success, but we'll come on to the first, which is that's your model build.

A lot of models are developed in open source these days. Python is the chosen tool for many data science teams. But having been the lead of quite a large insurance data science team, there is a big need for tools and software to help improve the efficiency of the actual data science team.

So I think you've got to balance the open source tools, which give you the innovation and the cutting edge, with other tools, which give you the governance, stability, and security, so a mixture of open source and proprietary tools for model build. And integration's an interesting one, where you've really got to understand existing systems and how best to surface that model result at what latency into the business to actually have that impact.

So various cloud technologies do help facilitate this, as well as development of existing products. So many insurers use Claim Centre Guidewire. There's a lot of press out there, which people can see around how people have integrated machine learning straight into Guidewire.

TOM: OK, that's great. And so this isn't something just for motor claims people to think about, right? This is around all different product types, and you've done it as not only in motor, but you've applied across other product lines as well, right?

PARDEEP BASSI: Exactly. So any decision where there is a benefit to improve that decision, and you have a reasonable amount of data available, you can impact that decision and improve it. And from my own personal experience, I've seen as many models being beneficial in the home space as I've seen in the motor space.

TOM: Based off your experience and the success you've had in applying machine learning and AI into claims, but what do you think is the biggest reason why people should be looking at this as a key area of opportunity perhaps over the next three to five years to really be investing in?

PARDEEP BASSI: So I think in the overall insurance value chain, so much thought and effort has been applied to better understanding your risk and charging the most appropriate price and understanding your underwriting footprint and it's almost there's still small small benefits left in that space. And yes, it's a very competitive space, but I think in the claim space, there is so much value from reducing your claim spend and better understanding and optimizing your processes.

And I think that's where the big, big value is. But it's a difficult challenge in that it's an operational space. So you really need to work closely with people who understand that part of the business, your claims domain expertise. And I think the biggest thing I would call out for almost a reason for success and something to avoid, which will result in failure, is that collaboration piece.

So you need to approach every single problem with input from both sides working collaboratively, understanding strengths and weaknesses to provide a joint solution, rather than go off to a third party provider, build me a magic solution, and then integrate that back into my business. This is a central core decision, absolutely fundamental to an insurer, which you should keep in house because it's essentially-- it's one of the most important decisions you make, so in house in the manner that you understand exactly how the decision is made, and you get to input your domain expertise and your claims insurance expertise into that decision.

TOM: And so just bringing it sort of full circle to where we started. LV recently joined, bringing all that experience to bear. What are your goals here at Willis Towers Watson? What are the areas that you're going to be working on and looking to help insurers with, particularly in relation to how that's going to play out in helping insurers improve their claims processing?

PARDEEP BASSI: So I'm looking to have an impact on the whole industry, and that's insurers who are new to data science and machine learning, those who have teams have made good progress, and those who are really well established and are having a significant impact. And I think there's huge opportunities to help each of those three groups further accelerate their adoption of machine

learning and have that bigger and bigger transformational impact on their business, their bottom line.

And I think I'm here to help each of those three groups, but also, I'm here to help the industry overall because I think the better we understand and apply machine learning in the insurance industry, ultimately, it helps our customers, the end customers.

TOM: That's great. And so is it going to be focused on some of the things you talked about around providing those kind of tools and capability, which blends the creativity cutting edge analytics with some of the governance capability that you mentioned, is that partly what you're going to be focusing on and delivering for WTW?

PARDEEP BASSI: Yes, yes, Tom. So what we're looking to do is accelerate WTW and move into building tools for machine learning practitioners. So we've recently opened up our radar suite to integrate Python, which I think, is a perfect example of how you balance the open source innovation with that controlled governed framework to ensure your models are built, deployed, and integrated with a full understanding of the risk.

We were looking to further accelerate that. And I think another recent release, which is very interesting is we've developed custom algorithms, layered GBMs being the one we're talking about here, where it gives you full transparency of the decisions you make, as well as the predictive power. So insurance-specific application of machine learning is the way to really extract the maximum value, and we're looking to provide all the tools to data science teams, actuaries, analysts. Whoever's building machine learning models and looking to extract value from them, we're here to help provide the tools they need to do that better.

TOM: Excellent, Pardeep. I really appreciate you joining us for this podcast. I'm super excited around the transformation that we can be helping claims functions with over the course of the next three to five years. We're really looking forward to working with you in delivering on some of these capabilities. So really appreciate your great insights and sharing some of your experience, and no doubt we'll catch up with another podcast in a year's time to see how that progress is going and giving everybody a bit of an update on how things have moved on and on what's coming next.

PARDEEP BASSI: Great. Thank you, Tom.

TOM: Cheers, Pardeep.

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