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Use of Artificial Intelligence in Motor Claims: The Future is Now

Artificial Intelligence (AI) is a powerful technological tool with the potential to transform the insurance industry in manifold ways. Currently it is considered to be the single most important digital innovation of the decade. While AI provides opportunities for insurers to further modernize their business, introduce incredible innovations, effect all-around efficiency and minimize the turn-around time (TAT), implementing AI effectively needs to be handled with adequate understanding of the technology in redesigning of the processes so that AI can be beneficial to the organization/industry. This paper specifically analyses (a) the benefits of AI in motor claims settlements, and (b) a case study on the testing, conducted with one of the AI applications to test its feasibility and adoptability.

Key Words: Artificial Intelligence, Motor Insurance, Motor Insurance Claims

Introduction

Artificial Intelligence (AI) is a branch of computer science concerned with building smart programs capable of performing multi-tasks that typically imitate human intelligence. AI is an inter-disciplinary science with multiple approaches. Moreover, advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of high-tech industry where technology is extensively adopted. There are various forms of AI; however, every branch of AI is based on manifold sets of tailored data and assembled with intelligent algorithms with particular objectives and specific purposes. Such being the evolution and application of AI technology, every type of industry and every form of business can therefore benefit from the adoption of AI tools *- the insurance industry is no exception.*

Over the past several years, AI technology has progressed phenomenally and continues to be developed to deliver results quicker and with better accuracy. It has become

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increasingly adept at performing tasks historically difficult for ordinary computer programs to execute, including recognizing images and using even unstructured data. The acceleration in AI is being driven by exceptional technological advances along with a major shifts in customer expectations. Higher computing power, memory capacity, cloud computing, big data technologies and global connectivity of both people and machines have enabled AI technology to run complex algorithms and handle much more input data faster than human intelligence. Moreover, shaped by their varied experiences with other industries, insurance customers, particularly millennials, now expect delivery-on-demand services.

What has become clear over the last few years is that the application of AI in traditional industries, such as the insurance sector, is already in vogue with many more Indian-international companies already lined up for adoption into their workflow systems.

Benefits of AI in the Insurance Sector

The insurance sector is adding enormous amounts of data daily and the speed at which it is collecting all that data is astonishing. It becomes a herculean task to sift, organize, analyse, deduce and convert all that information into innovative ideas to be of service to the organization/business. This is where AI plays its role best in business. Along with enabling smarter decision-making, the process efficiencies that can be gained by implementing AI technology and the cost savings associated with such efficiencies are simply incredible. Many insurance companies around the world have been using AI in policy underwriting algorithms and now the development of image recognition and image analytics technology with AI is destined to change the claims management process in the very near future and that too extensively.

The claims process, in particular, would benefit from increased automation. AI and automation would make for a much faster and more efficient settlements for lower value claims. Even with more complex claims, however, AI could support claims decisions, speed up some processes and enable a more customized claims service. It can enhance services like analysing submissions, checking or verifying policy documents, developing new insurance solutions and flagging potentially fraudulent claims.

Along with efficiency gains, AI can play a critical role in fulfilling the expectations of the customer of today, which are growing day by day. These can be fulfilled only by providing much shorter Turn Around Time (TAT) and transparent processes. The issue that is foremost for companies is not so much how to reduce TAT, but how to reduce TAT with a high level of accuracy. In the case of motor claims, this is becoming more and

more relevant as the vehicles are also becoming more and more complex, a much higher level of expertise for proper assessment is the need of the hour .

AI Developments around the World

Though AI is the buzzword and on top of the agenda at board meetings nowadays, it has moved towards a high level of maturity in the recent past. There are several reasons why AI has developed rapidly, especially in Europe and the USA, mainly due to the surge of investments put against it by the insurance, technology, and banking industries. Also, the AI technology itself has reached a higher level of maturity faster with new developments and increasing computing power availability.

Specifically in the insurance sector, AI has been used widely in the USA for agricultural insurance claims for which AI modules are used to detect and create a claims assessment looking at aerial photographs of damaged fields taken via satellites or airplanes or drones. In motor claims, most of the insurance companies worldwide are either developing this technology internally or partnering with a tech company to make a tailor-made solution.

AI utilization was started in some countries in Europe (with Germany leading the way), and, in the USA as early as in 2017, when AI-algorithms were not as advanced as of today. They used individual claim cases which were successfully tested using AI "triage" for claim settlement – providing an automated flag on how to "route" the claim (depending on whether it is a total loss, large claim, or small claim). This helped insurance companies to route a workflow whereby the claims were automatically going to the right assessor and at the right time. This helped them reduce TAT through efficiency in the survey process, but most importantly, place the right staff of assessors depending on the number of claims being routed to a particular workflow path. This was enough to add value to the insurance companies and encourage them adopt the AI systems.

As AI technology started to get attention from several fields, many new start-ups emerged developing systems with varying sophistication. This also enriched the playing field giving insurance companies several potential partners to experiment with. Now, also in India, there are several companies such as ClaimGenius, Inspektlabs, CamCom and Audatex Solutions that are providing such AI solutions to the market with varying degrees of effectiveness.

Since then, AI has developed to a point where the accuracy of calculations has reached a point where not just triaging, but the cost of assessment can be calculated to a very high level of accuracy - providing a very methodical, scientific, and accurate straight-through

processing capability. One of the recent developments that shows the importance and trend towards induction of AI is a pioneer German company - ControlExpert - that was fully acquired by the Allianz Insurance in March 2020.

Case Study with AI

In the case under study, a dedicated AI software is used with photographs of vehicles as inputs. Once the photos are exposed to the AI tool, all the other subsequent steps are automatic. The system then (i) processed the data and as output (ii) gave the identification of panels (iii) indicated damages to the respective panels and (iv) evaluated the severity of the damages.

The identification is pure data-trained AI; the severity calculation is made using proprietary algorithms, historical data, and expert inputs supplied to the AI tool. Severity calculation leads to repairs or replace decision. It then pushes that data into the calculation engine, which calculates and provides a relatively precise estimate of the cost of repair.

Pilot process: A total of 780 closed claims cases (i. e. cases where the invoice were already paid) were taken of the top 10 passenger car models from 3 different insurance companies. The photos of these cases were processed as described above, and, the results captured the following data :

1. Accuracy of *AI tool* in detecting panels
2. Accuracy of *AI tool* in detecting damages
3. Accuracy of severity algorithm
4. Actual invoice paid by the insurance company for those claims
5. Turn Around Time (TAT) to execute the process

Results and Findings

For panel detection, a variation from 74% to 96% with an average of 88% correct detection rate overall was seen. The table below shows the detection accuracy observed for a few common set of panels:

Part Name	Detection Accuracy
Front Bumper	96%
Rear Bumper	92%
Left Fender	88%

Right Fender	85%
Left Front Door	89%
Right Front Door	90%
Left Rear Door	87%
Right Rear Door	84%
Windshield	94%
Left Headlamp	92%
Right Headlamp	91%

1. Depending on the panels, the accuracy of the detection rate varies, which is a function of the amount of data fed into the AI engine for its testing. For certain panels which have a very low frequency of damages (e. g. car roof), the number of photographs used for AI testing would be less, hence the lower detection efficiency in the above table. Damaged panels of higher frequency have a much higher detection efficiency (e. g. front bumper at 96%).

   The detection rate is a function of the quantum of data that is fed as inputs into the system. It is a matter of short time the overall detection rate efficiency will reach >95%.

2. The AI tool detects several types of damages which are linked to panel construction and material (e. g. dent, scratch, on metal panels; shatter, break - on glass panels, etc). Damage detection accuracy was observed to be 93% overall - which is much better than expected. There were a total of 33 (4.2% of the total) cases where false negatives (damage was there but the system did not detect) or false positives (damage was not there but the system shows damage) errors were observed. These errors were corrected manually before the cost calculations.

   The table below shows the observations for the most common damage types and their accuracy of detection:

Damage Type	**Detection Accuracy**
Scratch	92%
Dent	95%
Crack	87%
Shatter (glass)	94%

3. Severity algorithms have to be modified as per market conditions (repair/replace decision and the cost of repair depending on severity). AI tool's severity algorithm has to be modified as per the specifications of Indian market conditions, which will be evolving with time as the conditions undergo changes. Again, these algorithms get better with time as more and more inputs are provided to the system. Inputs from industry experts and insurance companies' historical data are used to develop and finetune these severity algorithms. Data from the 780 cases were taken to formulate the algorithm that would yield cost calculations that were accurate within +/- 12% range of the settled amount. These variations are expected to decrease over time as the algorithms get evolved for greater accuracy.

4. As the invoices of the cases piloted were analysed, several discrepancies were noticed; these were analysed together with the respective insurance companies.

   There were some interesting facts that were observed:

   a) Due to a non-scientific, ad-hoc, surveyor's experience-based settlement process used by insurance companies the settlement amount varied drastically between cases within the same insurance company, and between insurance companies.

   b) For 93% of all the cases evaluated, the scientific-based system's output differed more than 5% of the invoice amount, ranging from Rs. 430 to Rs. 22,800 in either over or underpayment decisions.

   With regard to labor costs, there was no bifurcation of costs on mechanical labor, paint-labor and paint-material. It is understandable that if there were no standard method or system used for assessment of motor loss and the current method is dependent solely on surveyors' judgment and experience, variations would exist. It was astonishing to see, though, that variations were even as large as 93%.

   c) The average time taken to run through the process (from the loading of photographs into the AI tool to the automated assessed output) was 2.3 minutes. This does not include the time taken by the quality check personnel who were looking at the output and verifying its correctness. The average time taken by the quality personnel was 9 minutes per case with 16 photographs to check per case. Of course, manual checks of these cases' accuracy are required at this point, which can be eliminated once the confidence level in the AI accuracy grows.

5. The benefits of the use of AI in motor claims will consist in moving away from today's relatively manual workflow system to adopting Straight Through Processing (STP) with the assurance of high level of accuracy in just a few

minutes. However, it is very important to allow an interim 'period' or 'step' to ensure "collaborative intelligence" in the workflow whereby human inputs and corrective measures can be provided to the AI system for it to be tested and reach the desired maximum efficiency and accuracy levels. Where the AI technology stands today, and considering the speed at which it is being developed, we can safely assume that 'the future is now'!

Summary and Conclusions

There is no doubt that AI has forayed into the insurance business, particularly into the future of claims settlement management. It is expected to revolutionize the relatively manual and archaic process to a "straight-through" automated process wherein no human intervention would be required. Though the insurance industry is not there as yet, the journey has begun and there is no going back.

However, there are some relevant points to be kept in mind as the industry moves forward to full-scale adoption and "practical" and effective implementation of the AI into the system:

- Currently, AI technology via photo-detection is limited to the outer panels. Coincidentally, in India, the percentage of claims pertaining to outer panels 'only' is very high (ranging from 58 to 72%, depending on the insurance companies).

- AI systems should be operationalized at the earliest with human intervention as well.

- There is a need to continue further developing the technology to suit the specific needs of the insurance sector per se. However, there is no denying the fact that the current AI platform is ready to add value to the industry.

AI technology, coupled with data mining and data analytics, is the right solution for insurance companies to be able to manage the growing motor claims promptly, efficiently and cost-effectively without leakages. In the ultimate analysis Artificial Intelligence adoption is the current technology solution to satisfy customers' expectations. Any insurance company resisting this paradigm shift will be left behind and eventually become non-competitive, nay a non-combatant in the insurance arena.

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