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Artificial Intelligence and the Actuarial Profession

By Sarah Abigail

At the 2018 Society of Actuaries (SOA) Annual Meeting & Exhibit in Nashville, I was invited to coordinate and moderate a session on Artificial Intelligence (AI). The session was hosted by the Predictive Analytics & Futurism Section as well as the SOA General Insurance Section. The SOA provided the largest room available at the convention hall; however, it was filled to capacity, with people standing in the back, and more attendees unable to get in. This article is a synopsis of what was discussed.

It is clear that actuaries are excited about AI and AI's impact on the future of the actuarial profession. Technology is on track to provide more advancements in the next 10 years than we have seen in the last 50 years. Right now, tech companies are investing hundreds of billions of dollars to develop quantum computer chips. It is a race with limitless possibilities that will scale AI platforms in ways we cannot fully comprehend or imagine. What we know for sure is that AI systems to help actuaries with the decision-making process are being developed, and some of those systems are up and running today.

Shankar Vaidyanathan, the founder of Noonum; Martin Snow, FSA, MAAA, the vice president and chief development officer of Atidot; and Gaurav Gupta, the founder of QuaEra Insights, are actively involved in bridging the gap between machine learning (ML) technologies and the insurance industry. In our session, we answered some of the popular questions about AI, including how actuaries can start utilizing machine learning technologies that leverage AI.

After a brief intro about the origins of AI, Vaidyanathan shared how he built an ML tool that can read through millions of pages of financial data to find useful observations and esoteric patterns. Large amounts of data from multiple sources and of various forms may normally take a team of analysts years to read through, but the ML tool can search it and decipher necessary information in a matter of seconds.

With a handful of companies providing ML tools that can help actuaries with the decision-making process, Snow explained how the business side of the AI system works. The most important

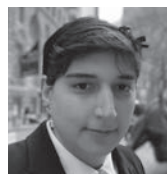
step an actuary needs to make is to ask the right questions. If a slightly vague question is asked, the software may give a vague set of answers. With ML solutions, there are a lot of people behind the scenes preparing data, designing customized models, engineering software to fit those models, analyzing results and validating those results, along with the team of executives who work with the client and want to make sure that the results are actionable.

One fun example that Snow shared was how his ML tool helped an insurer find customers who needed more insurance. Snow shared the strategy behind how the model was set up and how his ML software curated a list of underinsured policyholders who were most likely to buy more insurance given an extensive list of predictive variables. He shared that ML solutions are helping insurers discover a deeper understanding of their customers, which results in a reduction of balance-sheet risk, and improved margins.

Gupta was the final speaker, and he provided some deep insights on the relationship between the actuarial profession and the AI world. With so few actuaries involved in AI, Gaurav explained that there is a bigger hurdle for insurers to capitalize on AI in the way other industries have. Currently, ML can help insurance companies with automation, from underwriting to claims. Gupta's ML software helped an insurer by using online behavior data to find new low-risk customers. He also shared how ML helped another insurer with correcting a mortality table using 10 times more variables than a typical predictive analytics tool was able to handle.

To get started, Gupta recommended beginning with a small problem that can be solved in three to five months. Both Snow and Gupta recommended using internal data and making sure the answers will be valuable and actionable. The critical element, in Gupta's opinion, is choosing the right team. For the best outcome, he suggested bringing together actuaries, data scientists, and ML experts to develop the right questions.

Engaging actuaries in the AI world is one of my missions. In the next decade, the actuarial profession will heavily rely on AI functions. It is inevitable. AI is world-altering, and the flood gates are all open. The shape and direction of AI developments in the actuarial profession will rely on a handful of actuaries who pioneer it. Actuaries who are willing to get involved today will become ambassadors of the profession to the AI world. ■



Sarah Abigail is the cofounder at Ironbound Consulting Group on Wall Street in New York City. She can be reached at sarah@ironbcg.com.