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Forecasting during Pandemics

Pandemic and constant uncertainty, the scenario we are all familiar with. How has this period of constant disruption affected Forecasting solutions and systems?

Forecast systems and the algorithms that support them have evolved a lot in recent years. Nowadays, there are more and more components in the cloud, which help us or give the ability to all types of users and developers, to build simpler algorithms, which can achieve an interesting output and add value to organizations.

On the other hand, with increasingly available external data, third-party data, it is possible, in real-time, to have access to variables that add a lot of value to forecast algorithms, with constant updating, and that are fundamental for a reliable forecast of future events.

POSITIVE IMPACT ON THE FIRST APPROACH TO ARTIFICIAL INTELLIGENCE

There is a vast amount of Machine Learning solutions, an ecosystem that is sometimes even confused. You don't follow these topics so closely – Computer Vision, Anomaly Detection, and Forecasting-are some examples.

Forecasting is by far the most sought-after solution by companies today. Quick to implement, it is easy to validate results with excellent reliability indices. It is a fundamental tool to support decision-making in organizations. An ally for Managers allows them to easily and in real-time have access to forecasts, patterns, and consumption behavior. This is undoubtedly a good first approach and a first step towards implementing artificial intelligence in companies.

There are many algorithms available to Data Scientists, from the more classical approaches, which are based on doing linear regressions to identify the trend of the data, algorithms that are focused on time series and can make very long-term predictions, more complex algorithms with components forecasting trends, seasonal variations, including impacts from holidays and holidays, which, with the addition of external variables, are more complex, but also more resilient and reliable.

All of this, driven by the processing power that the Cloud has brought us, is available to everyone and came to “democratize” the

access and implementation of this technology. These cloud solutions, with pre-configured algorithms, can also, to some extent, cover the general needs of most organizations and place artificial intelligence a short distance from the real scenario of organizations. Artificial intelligence and its predictive capacity are no longer a distant vision of science fiction.

THE DISRUPTION CAUSED BY THE PANDEMIC

However, the scenario in the last 12 months added dynamics and a sudden change in the time series, and a new layer of complexity to the theme.

There are several use cases, for example, in a sector like a restaurant that was brutally impacted by the pandemic, in which overnight a powerful trend and a very constant pattern of consumption turned to nil consumption, causing disruption in this technology and the forecast algorithm.

The pandemic context, thus, caused enormous challenges to data scientists. This total disruption of data quickly rendered the algorithms' learning patterns, which could no longer be applied, obsolete. Therefore, anomalous situations arose, such as negative forecasts, because the time series could not adjust to the absence of data. The solution went through a creative exercise and a lot of work, trial, and error, the search for new external variables, macro-economic variables, previously ignored indicators, and increasing complexity of the algorithms. The introduction of statistical variables, formulation of hypotheses, removal of missing values, data interpolation, among other techniques, were the basis of the work in recent months.

A “chaotic” scenario, but at the same time exciting, for those who work in this area, where the very variability of the activity of each company was added, even if operating in the same sector of activity. Others that closed and stopped completely remained with minimal activity, others that changed from one regime to another over time. Selective stops, change of scenarios, legislative and rule changes between weekdays and weekends, weekly and fortnightly changes, truly atypical and uncorrelated consumption patterns, or even the very change in the customers' consumption habits.

The forecast algorithm is versatile and adaptable. It can be enriched with external information or other types of approaches. This experience and period also allowed us to train teams and professionals in other skills and agility. The response to this scenario will require a solid preparation and investigation, realizing that the last recent period of time, being a really atypical period (we all hope that), will force decisions on the "weight" to consider of this period, concerning the pre-pandemic periods and, see, how this variation actually behaves.

Since it is impossible to predict what the "new normal" will be in terms of consumer habits and interactions between consumers and customers with companies, the big question that arises at the moment is whether forecast algorithms will continue to have this need for adjustment during a long time, or if they will be able to adapt quickly to new trends and new dynamics. Resilience will be a key factor, which all organizations will need to pay increasing attention to. A period as disruptive as this one, in fact, put all the agents involved to the test.

The trend clearly points to the need for increasingly personalized and customized solutions, dropping the concept of “auto-ML” or “one size fits all” solutions. Personalization will be a key factor.

These have been particularly demanding times for those working with data, forcing data scientists to “get out of the box” and look for different formulas to achieve the ultimate goal: providing business decision-makers with reliable data to support their decision-making. Decision!

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