



Digging Beneath the Surface:

CONTEXTUAL DATA MINING



LIVING IN THE WORLD OF BIG DATA

We live in a world of Big Data, but just because there are tons of data everywhere doesn't mean that it's all equally valuable. The richest insights are often buried deep within a variety of sources and it can be a huge task to dig them out. Even as self-service analytical platforms proliferate, experts with the analytical skills to perform this much-needed work are in short supply. With data quantities growing every day, the skill gap will not be closed by humans. Only a massive technological solution can give users, businesses of all sizes, and indeed, the world, access to insights in ways that make sense to non-technical users on the scale that's needed.

Enter: Contextual Data Mining. Along with increases in the sheer volume of data that organizations are dealing with has come a surge in machine learning and artificial intelligence technology. The two phenomena are linked: only AI and ML can tackle the challenges presented by Big Data; meanwhile, Big Data provides an unparalleled opportunity for AI/ML systems to learn and grow, becoming more effective learners along the way. The future of business intelligence lies in [augmented analytics](#) and augmented BI systems where AI and ML are integrated across the entire BI process. These systems are the wave of the future, and Contextual Data Mining is the tip of the spear when it comes to putting AI-powered insights into the hands of business users and empowering builders to create the next generation of actionable analytical apps.

This paper will start by understanding the relationship organizations already have with their data. Then it will discuss technological approaches to solving the problem, followed by the opportunities that this technology opens up. Finally, it will look at how these new opportunities can positively impact frontline data users and organizations of all kinds.



DEALING WITH BIG DATA TODAY (OR NOT)

Analytics and BI companies can be said to have succeeded, evolutionarily speaking, in terms of the degree to which they have penetrated markets and companies, putting a wide array of products into people's hands. These products offer users of all technical skills levels access to reports, visualizations, and insights from the deep wells of data that companies are collecting and tapping into. However much the industry has progressed in offering true self-service, the future of business intelligence must go beyond simple this model. While more and more frontline users are being empowered to dig for insights on their own, they are limited by their skills and by the capabilities of their software platforms.

To increase the insights (and thus the value) that they can derive from their data, companies have relied on data scientists and skilled analysts. These data virtuosos use the same software as their business-user peers but are able to manipulate the systems to greater effect and bring game-changing insights back to decision makers. As previously mentioned, this pool of dedicated experts is smaller than the current business environment demands. Currently, the companies with the most money have the ability to hire more of these scientists and analysts vs smaller companies. Paired with the larger, more complex datasets that these companies often have access to, the gulf between the data and insight advantages that larger companies can leverage compared to smaller ones continues to widen. Financial concerns may limit a smaller company to hire just one analyst (as opposed to larger companies which may have entire teams) and to selectively focus on projects that may or may not yield useful insights. Meanwhile, their more monied competitors keep outpacing them.

Additionally, companies have turned to outsource their analytics needs to third-party companies specializing in the art of data. While it initially seems to make sense (hire an expert to do something you're not an expert in), the deep understanding of the company's core business (which the outside experts won't possess) can often hamstring these efforts. Thus, smaller companies are left competing for a dwindling pool of scientists and analysts to bring in-house. Moreover, just having a great data experts isn't enough to ensure analytics success: a strong in-house analytics program requires good data-handling best practices, a robust overall data and analytics strategy that the whole company is behind, and support from IT, engineering, and developers!

Even for these larger companies who temporarily possess an advantage thanks to their superior capital, their edge will be short-lived. Just as the industrial revolution replaced small-scale human production of commodities with machine-made production that no human could match, the data revolution has created a pool of data too massive for even highly skilled analysts armed with powerful self-service platforms to handle as scale. Augmented analytics, where AI and ML work together to serve up deeper insights, will be required to counter the overwork that scientists and analysts face right now and to level the playing field. A smaller company armed with an augmented BI system will have access to augmented intelligence on a scale that was previously out of reach, given human and financial limitations. Technology unlocks insights and empowers users.

THE TECHNOLOGICAL SOLUTION TO DATA CHALLENGES

[Augmented analytics](#) is the future of business intelligence. The latest generation of analytics and BI platforms are steadily adding AI, ML, and other elements to assist humans in their efforts. Truly augmented business intelligence systems will feel completely different from current platforms because they will integrate AI/ML assistance across the entire process, from data ingestion to insight sharing. From the moment data is connected to the system, they will start cleaning, suggesting other datasets to mashup, and guiding analysis.

At present, contextual data mining brings AI assistance to human users as they manipulate existing systems looking for insights. Systems like [Analyze with Insight Miner](#) (AIM) deliver tremendous value from data by serving up insights that was previously unknown, hidden or unreachable—with a single click. They are intelligent enough to identify noteworthy highlights within datasets and surface them to users, regardless of the users' abilities. To bridge the gap between less technically-skilled users and the sophistication of the data, the system presents the insights via visualizations and in non-scientific, easily-understandable terms. Not only do utilities like these simplify life for users by giving them insights they couldn't have pulled together on their own, but it also increases their understanding of those insights.

And learning with these AI/ML systems is a two-way street: as humans use the system to pull more insights, they can indicate which insights they find most useful. The system then learns from this feedback loop and surfaces more similar insights in the future. Additionally, once the insights have been served to the user, AIM can also suggest other users to quickly and easily share those insights with. Users can accomplish this with one click, right inside the AIM interface.

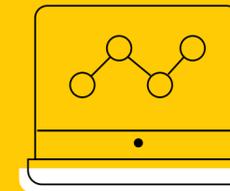
BUILDING THE FUTURE WITH ANALYZE WITH INSIGHT MINER

Technologies like AIM aren't just for giving end-users easy-to-understand insights to bridge skill gaps and improve decision making. They also represent a huge opportunity for one of the most important team members when it comes to dealing with data and helping create smarter organizations and more powerful products: builders. Not everyone who interacts with data is equipped to assemble their own dashboard, even if tools like AIM would help them more easily pull insights out of it.

That's where builders come in, creating not just custom dashboards, but also actionable analytics apps that deliver targeted insights to end-users via widgets that fit their exact needs. Users can take advantage of AIM from any analytical app to gain a deeper understanding of the insights they're seeing, dig into them, and share their findings with teammates. From any widget on a dashboard, a business user leveraging AIM can compute common predictive analyses like a cohort, decision tree bivariate analysis, and more. The statistically interesting insights are always presented first, making the user experience simple and easy to understand. Insights that previously couldn't have been uncovered without the efforts of analysts and data scientists are now at any user's fingertips. It's a huge leap forward in what analytics can accomplish and what builders can conjure for their audiences.

CONCLUSION

The combination of customizable analytics widgets and augmented analytics-style assistance from systems like AIM is a huge opportunity for builders and end-users alike. As the amount of data that organizations deal with keeps scaling upwards, both the number of end-users who could benefit from the insights in that data and the difficulty of extracting and understanding those insights also increases. Builders are constantly creating new and more robust analytics apps to empower these end-users, but the limits of the end-users' technical skills have boxed in the ultimate upside of these apps. Until now, that is. The proliferation of augmented analytics systems that serve up deeper insights, explain those insights to users, facilitate faster sharing, and even learn from the users' preferences is the next giant leap in building the future of analytics.



See how easy it is to uncover hidden insights with the power of machine learning:

[Try Analyze with Insight Miner Here](#)