Zignal Labs Performs Next-Level Sentiment Analysis Using Amazon SageMaker and Amazon EC2

Zignal Labs performs nuanced sentiment analysis on billions of stories per month using AWS. Zignal Labs offers solutions that analyze the entire digital media landscape to deliver instant insights for the company's Fortune 1000 customers. The company built a sentiment-analysis pipeline that uses Amazon SageMaker for machine-learning capabilities and Amazon EC2 C5 instances with Intel Xeon Scalable (Skylake) processors for faster model training and evaluation.

"It takes many good deeds to build a reputation, and only one bad one to lose it." Benjamin Franklin's words are as true today as ever, and the stakes around reputation are especially high for businesses. Even the most famous, popular brands can lose billions of dollars in shareholder value on customer perceptions that they have committed Franklin's "one bad deed." In other words, it's never been more important—or difficult—for businesses to manage and safeguard their reputations.

"We now live in the 'reputation age,' when a company's brand is defined by the billions of conversations and stories happening across disparate digital and social media platforms every day," says Andras Benke, manager of data science and innovation labs at Zignal Labs, a company that helps its customers measure brand impact, mitigate reputation risks, and inform data-driven communications strategies.

"Sixty percent of a company's valuation is tied to reputation, so businesses must understand brand sentiments from throughout this enormous and dynamic digital media landscape," Benke continues. "If enterprises are going to be able to synthesize this massive volume of messages, counter the threat of fake news, and build trust in their brands, they need the power of modern analytics on their side—now, more than ever before."

Zignal Labs decided to help its customers with this challenge by taking existing sentiment-classification techniques to the next level with a focus on reputation polarity. As opposed to solutions that only search for positive or negative language in online content, the company wanted to offer a solution that identifies the actual positive or negative impact of that content on a brand.

To accomplish this, Zignal—which has been using Amazon Web Services (AWS) since its founding in 2011—used AWS to build a sentiment-analysis pipeline that could better understand the nuances of brand mentions across the entire digital landscape. The Zignal Labs pipeline does this with a machine-learning solution based on Amazon SageMaker, a fully managed platform that enables developers and data scientists to quickly and easily build, train, and deploy machine- learning models at any scale. It also uses Amazon EC2 C5 instances, featuring Intel Xeon Scalable (Skylake) processors.

Overcoming the Limitations of Traditional Sentiment Analysis

Zignal Labs was all too familiar with the limitations of third-party sentiment-analysis solutions, having experimented with many of them itself.

Reduced development and operations costs by 90%.

Company:	Zignal Labs
Industry:	Software & Internet
Country:	United States
Employees:	100
Website:	zignallabs.com

About Zignal Labs

Zignal Labs offers solutions that analyze the entire digital media landscape to deliver instant insights for the company's Fortune 1000 customers. The company is based in San Francisco, California, and employs 100 people.

Benefits

- Improved precision of sentiment analysis by 30%
- Reduced development and operations costs by 90%
- Improved customer acquisition and retention

AWS Services Used

- Amazon SageMaker
- AWS Lambda
- Amazon EC2 C5 Instances

> “Using Amazon SageMaker and Amazon EC2 C5 instances, it's easier than ever for us to deliver high-quality sentiment analysis.”
>
> Jonathan Dodson, Vice President of Engineering, Zignal Labs

"Some of these tools presented problems around scalability, and some weren't well suited to all the different media sources we need to track,” says Jonathan Dodson, vice president of engineering at Zignal. “No matter how much money we spent on third-party sentiment-analysis solutions, we weren’t able to deliver our customers enough sentiment information. So, we built our own, using the powerful machine-learning capabilities available on AWS."

In addition to Amazon SageMaker and Amazon EC2 C5 instances, Zignal Labs utilizes a distributed streaming architecture, including Spark, Storm, and Elasticsearch, to ingest more than three billion documents per month. The collected articles, tweets, blog posts, reddit posts, broadcast television programs, and comment threads are analyzed in Amazon SageMaker using machine-learning models that are retrained daily with inputs that include label data from “Human Intelligence Tasks” performed by workers from the Amazon Mechanical Turk (Amazon MTurk) marketplace.

Zignal Labs uses natural-language processing to differentiate between messages that simply contain apparently positive or negative words and those that constitute a positive or negative message about a brand. Zignal customers can access the resulting sentiment values, the predictions and insights based on these values, and other information through the company's platforms and products, such as the Zignal Enterprise media intelligence platform for communications, marketing, and executive teams.

Zignal Labs selected Amazon SageMaker because of its flexibility and ease of management. "Amazon SageMaker relieved us from the undifferentiated heavy lifting of maintaining and managing the underlying infrastructure for building the data and coming up with the right analysis," says Jeff Fenchel, a senior software engineer for Zignal. "With Amazon SageMaker, the necessary machine-learning models could be built, retrained on a daily basis, and deployed quickly and easily at the scale we needed."

Zignal Labs chose Amazon EC2 C5 instances because they were efficient for training and evaluating the models used by Amazon SageMaker. "Our model architecture uses neural networks with long short-term memory (LSTM), which are trained and evaluated with small batch sizes," says Fenchel. "We chose Amazon EC2 C5 instances because our tests showed that their Intel Xeon Scalable processors were twice as fast as GPUs for this application."

Next-Level Sentiment Analysis on AWS

The new Zignal Labs sentiment pipeline is delivering results that show at least 30 percent improvement in precision compared to prior methods, helping the company win and retain customers. "Sentiment is really a make-or-break point for our clients," says Dodson. "Our new pipeline on AWS is further strengthening the match between what our customers are seeing and what the platform is telling them, and that is helping us bring new customers on board and keep the existing ones happy. Because the solution was built on AWS, increased accuracy is being delivered at much lower cost than would be possible using third-party sentiment-analysis solutions.”

"Building our new sentiment pipeline on AWS reduced the cost of both its initial development and ongoing operations by 90 percent," says Benke. "The efficiency of AWS enables us to shift funds into improvements and innovations to improve the quality of our product and increase customer satisfaction."

Dodson has this takeaway: "Companies that effectively measure their reputations create shareholder value. Those that don't lose shareholder value. Using Amazon SageMaker and Amazon EC2 C5 instances, it's easier than ever for us to deliver high-quality sentiment analysis, which is a crucial part of reputation management."