Crisis Text Line Gets Help through Data Science Company Pivotal to Save the Lives of At Risk Teens

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While millions of people are at risk of committing suicide, teens are often the most in distress. A number of solutions have been created to reach at-risk teens and help prevent them from taking their own lives. One of these is Crisis Text Line. However, the organization found that it required assistance in measuring interaction value and creating predictive models to help create positive outcomes in the future.

Who Is Mosaic Data Science?

Crisis Text Line was founded in 2013. Since then, the organization has helped hundreds of teens every single day. Crisis Text Line (CTL) works on a volunteer basis, meaning that all of the organization's responders (texters) are volunteers, not employees. According to the company's website, "Crisis Text Line trains volunteers to support texters in crisis. With 7,654,779 messages processed to date, we're growing quickly, but so is the need."

CTL is free to all, and available on a 24/7 basis. Crisis counselors (volunteers) actively listen to young people at risk of committing suicide, and attempt to shift them from "a hot moment to a cool calm." The basis of the organization's success is its delivery format – text. Today's teens are far more comfortable with texting, even more so than voice communication. This creates an environment of trust in which CTL counselors can quickly begin changing the situation.

The Challenge

While the format utilized by CTL is one that teens trust and are intimately familiar with, it's not without its drawbacks. For instance, it's relatively simple to measure value in a voice conversation simply by listening to intonation. However, text-based conversations do not have this, meaning that it can be a challenge to determine exactly how much value teens receive from counsellors.

However, text-based conversations do have their own unique subtleties that can be used here. The issue is that sentiment analysis of emotional expression, meaning and complexity in text conversations requires the use of data science. Crisis Text Line chose to work with Pivotal for Good (a branch of Pivotal, which allows the company's data scientists to donate up to three months of time to serve nonprofit organizations without the resources to perform data science

in house).

The Solution

The solution to CTL's challenge was multifaceted, and required data scientists to modify practical natural language processing applications to suit a very different environment. For instance, one aspect focused on the use of punctuation in text conversations. Previously, CTL did not focus on punctuation as a measurable element in and of itself. However, the Pivotal team determined that not only could punctuation be used to help measure value, but that it often translated directly to emotional expression.

To that end, the team decided to include a question-to-statement ratio (based on punctuation), as well as emoticons used in text. Finally, they decided that ellipses should be included as well, but decided they should be used as inpidual words with their own meanings. Based on this, the team had to construct a tokenization system that treated emoticons as words, and ellipses as words, rather than seeing them as simply inpidual punctuation marks within a greater conversation.

Another step in developing a data science solution to derive value and help predict future outcomes was the creation of a custom dictionary. Most data science dictionaries that deal with situations like this eliminate common "stop words." These include pronouns (I, me, you, she, etc.). The problem is that removing pronouns from the conversation eliminates the ability to correlate one inpidual's sentiment to another's, or to disassociate said sentiment.

The Value

In the end, Pivotal built an analytical framework that included topic models and word-based features specific to Crisis Text Line and their unique audience. The framework and the output will help analyze text and provide the basis for not only future product direction, but for counselor training as well. Data science ultimately led to changes in CTL's platform and the overall training program used for counsellors, enabling them to provide better care for teens in crisis. This is exemplified in higher satisfaction ratings, and more lives saved.

Source

http://blog.pivotal.io/data-science-pivotal/case-studies-2/pivotal-for-good-with-crisis-text-line-using-text-analytics-to-better-serve-at-risk-teens

About the Data Science Foundation

The Data Science Foundation is a professional body representing the interests of the Data Science Industry. Its membership consists of suppliers who offer a range of big data analytical and technical services and companies and individuals with an interest in the commercial advantages that can be gained from big data. The organisation aims to raise the profile of this developing industry, to educate people about the benefits of knowledge based decision making and to encourage firms to start using big data techniques.

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