Sentiment: Our Approach

Finch for Text

At Finch Computing, we build new ways of interacting with information. Perhaps nowhere is this more apparent than in our text analytics solution, Finch for Text® which makes human-generated text machine-readable. We say Finch for Text® is "software that reads and reasons" because proprietary technologies in the product enable it to extract, disambiguate and enrich entities and to assign sentiment to these entities in ways other solutions just can't replicate. Below is a sampling of how we approach sentiment in support of a number of business and mission-critical use cases.

Core Sentiment Detection Using Deep Semantic Features

We go beyond just key words to understand sentiment in text. Our models were trained on a large and diverse corpus of news, conversational and narrative datasets to capture nuances in language that other products cannot. In the example at right, the inclusion of the word "doesn't" makes this sentence – full of positive words like cleverness, wit and humor – a negative statement. Our algorithms detect that.

Example:

Movie reviewer Bob Smith said, "This movie doesn't demonstrate cleverness, wit or any other kind of intelligent humor."

Entity-Level Sentiment Assignment

Going a level deeper, our sentiment models understand sentiment at the entity level – rather than just at the sentence or document level. This context-based approach can be applied on large documents, rich with entities. The example at right shows the importance of understanding sentiment this way; the statement is positive about Capital One but negative about Deutsche Bank.

Example:

Capital One Bank is expected to report a full-year $2B net profit on Wednesday, but the same fortune is not shared by Deutsche Bank.

Directional Sentiment Assignment Between Entities

Additionally, Finch for Text® can understand where entity-level sentiment emanates from and to. This is critically important in product reviews, reputational assessment and situational awareness contexts. In the example to the right, an observation in news about South African politics, we can see that former president Nelson Mandela was believed to have had a positive sentiment about candidate Ramaphosa and a negative sentiment toward candidate Thabo Mbeki.

Example:

Mandela hoped Ramaphosa would succeed him, believing Mbeki to be too inflexible and intolerant of criticism, but the ANC elected Mbeki regardless.

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Multi-Class Sentiment Models

Beyond just positive, negative or neutral sentiment, Finch for Text® can understand emotions expressed in text such as: aloofness, sympathy, anxiousness, surprise, etc. We employ a proprietary variation of a standard convolution neural network, with architectural and parameter tuning to understand deep semantic word vectors for varied classes of sentiment. In the example at right, from an employee email, it's clear that this is an angry or aloof statement, rather than just a "negative" one.

Example:

I can't believe this is our new strategy. There is so much more we should be considering. I'll just do what I'm told and wait for it to fail like it always does.

Degrees of Sentiment

Finch for Text® can also interpret various degrees of sentiment. For example, whether someone is more positive, less positive; more aloof or less aloof, etc. These comparisons can be made from one author to another or from day to day to determine how an individual person's sentiment has changed or evolved over time.

Example:

Author 1: I think the team's new plan is good. (positive)

Author 2: I think the team's new plan is fantastic! (more positive)

Topic-Level Sentiment Assignment Model

We can also apply our algorithmic, entity-level approach to sentiment to specific topics discussed in a document. To do it, we examine a temporal window of textual conversation and employ our inference-trained models to decipher the topics about which the author's language is referring. In the example at right, we can see that while negative sentiment is expressed, it's about a football game. The anxiousness detected is in response to sales numbers, and *that* is a more valuable insight than the negative sentiment expressed in the message.

Example:

Yeah, I'm so upset about the Lions' loss. Oh well... What has me really worried are the Q3 sales figures. Have you seen them?

Supported Use Cases

Finch for Text® is being used or is under evaluation to support a number of business and mission critical use cases in the federal and commercial spaces. Among them:

- Customer Call Center Analytics
- Survey Analysis & Insights
- Assessing Product Reviews
- Media & Brand Monitoring
- Insider Threat Detection
- Intelligence Analysis
- and more...

To learn more, please contact us at sales@finchcomputing.com or visit us at www.finchcomputing.com.

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