

Natural Language Classifier

Overview

Watson



November 2018

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Every minute:

150K emails sent

450K tweets

29M WhatsApp messages

From messages to support tickets, text classification is at the core of natural language processing.

The key to understanding this data is natural language classification

Common Pain-points

Natural Language Text Processing

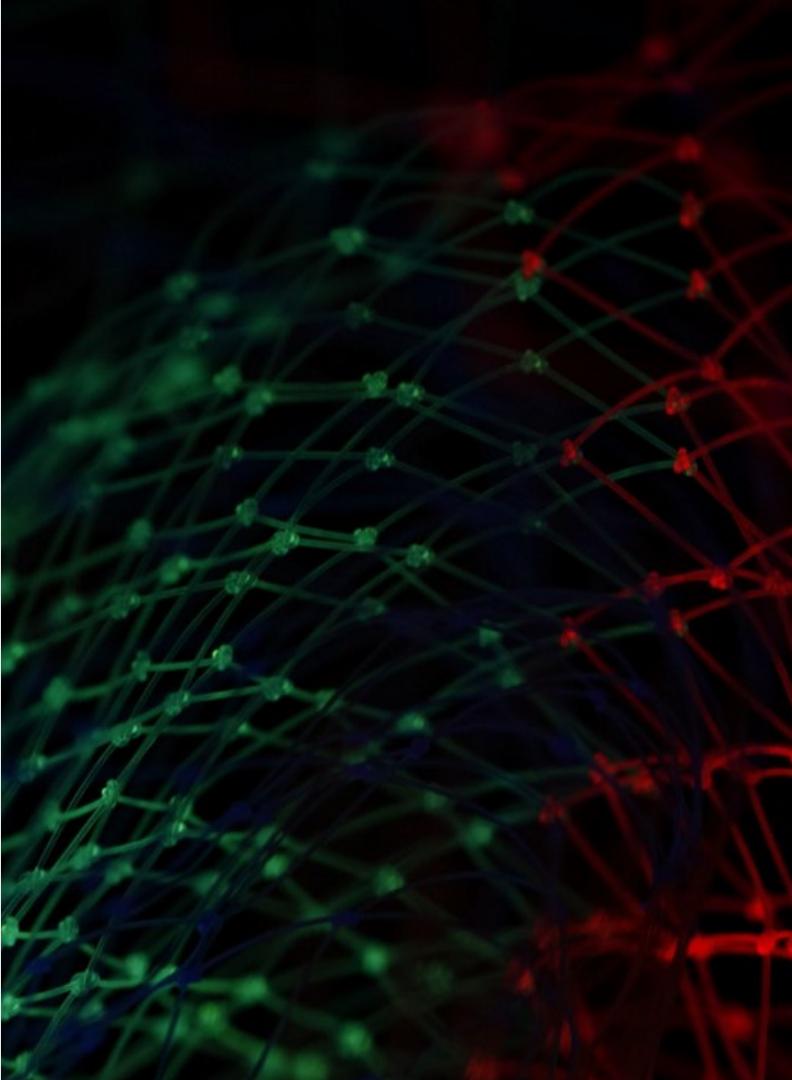
With the amount of data out there, is there a way I can categorize it all into classes

Customizable Classes

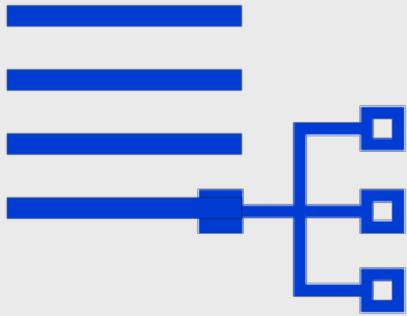
Current classification tools have predefined classes that I cannot customize

Scalable Models

There is too much data out there for my own model to handle. Do I have to be a developer?



Watson Natural Language Classifier is



A custom **text classification** service that enables users to quickly and accurately **create, train, and evaluate** text classifiers using **machine learning**.

Watson Natural Language Classifier provides



Tooling and API

Developers can leverage the NLC API for easy integration into applications in their preferred language.

Not a developer? No problem! Use the Watson Studio tooling to create, train, and evaluate your custom classifiers.



Customization and flexibility

Watson Natural Language Classifier allows you to train and build your own classifiers at scale.

Customize your models for various industry verticals from finance to social media.



Privacy & Security

IBM ensures that the data passed through our service remain secure on the IBM Cloud.

The IBM Cloud offers enterprise grade security, around the globe support, and multi-region deployments.

Natural Language Classifier features

Training

Build custom classifier models via tooling to categorize text phrases

Deep Learning

Upload larger and **Train** faster datasets for training leveraging GPUs. Each .csv file can contain up to 20,000 rows

Language Support

Create classifiers in: English, Arabic, French, German, Italian, Japanese, Korean, Portuguese (Brazilian), and Spanish

Multi-Phrase Classification

Simplify categorization by viewing confidence scores for multiple categories



Natural Language Classifier Tooling

Watson Studio

A suite of tools for data scientists, application developers and subject matter experts to **collaboratively and easily work with data** and use that data to **build, train and deploy classifiers at scale**

Learn how a subject matter expert can leverage the free Watson Studio tooling to train for a support ticket classification use case

[YouTube Video](#) | [IBM Webinar](#)

The screenshot shows the 'New Classifier' page in the IBM Watson Studio interface. At the top, there's a navigation bar with links for Projects, Tools, Community, Services, Manage, Support, and Docs. Below that, a breadcrumb navigation shows 'Projects / Demo / New Classifier'. The main area is titled 'New Classifier' and has tabs for 'All text' and 'My classes', with 'My classes' being selected. On the left, there's a section titled 'Create a class' with a dashed box for uploading a CSV file or creating an empty class. To the right, there are six sections, each containing a list of support tickets:

- Billing (25)**:
 - I need to change my billing and shipping info?
 - make an account change
 - I need to update my account, can you help?
 - how can I change my account details
- Order Change (26)**:
 - oops I made the wrong order quantity, can I update it?
 - is it too late to update my shipping address
 - is my order still pending
- Password Help (26)**:
 - i forgot my password
 - i want to reset my password
 - i cant remember my login
 - My password doesn't work
- Sales Opportunity (44)**:
 - Do you have any new products available?
 - when is the spring catalog come up out?
 - is the summer options available?
 - can I buy last year's jersey anymore
- Shipping Info (30)**:
 - when will my order arrive?
 - I'm still waiting for my package
 - track order
 - I'd like to track my package

Industry Vertical Applications



Identify potential risks from online data sources



Simplify your workflow by classification of e-mails



Organize tweets, posts, and messages into categories



Analyze documents by categorizing them into user defined sections



Categorize support tickets and messages to identify issues



and many more...

Client Use Cases | IBM Talent: HR & Recruiting



Need

Derive soft skills & interpret phrases on resumes. Need to a way to search resumes for soft skills and key competencies not relating to specific terms

Solution

Used NLC to parse resumes. Input phrases from a resume and classify them into categories: Collaborative, Engaging, etc.

Benefit

Further automate resume scanning with the ability to search and extract key soft skills and competencies.

Free recruiters time to allocate toward interviews

Client Use Cases | Influential Network



Need

Firms that market using social media influencers can't guarantee demographic targeting and timed messaging. Influential sought a solution that could help agencies address such issues.

Solution

A demographic analysis & mobile solution helping influencers authentically amplify their marketing message throughout various social media campaigns.

Benefit

Analyze 5B follower accounts with ease, while streamlining daily workflows

Ensure influencers social voice and followers maximize marketing results

Deep Learning

Word Vectors

Background word embedding's on large general-domain corpus (Wikipedia) through unsupervised training (word2vec)

Adapt

Word embedding's with in-domain data (customer-provided) through online incremental training



Core NLC Models

Convolutional neural network (CNN)

Text classification with word embedding as input
along with other ensemble models

IDFSVM

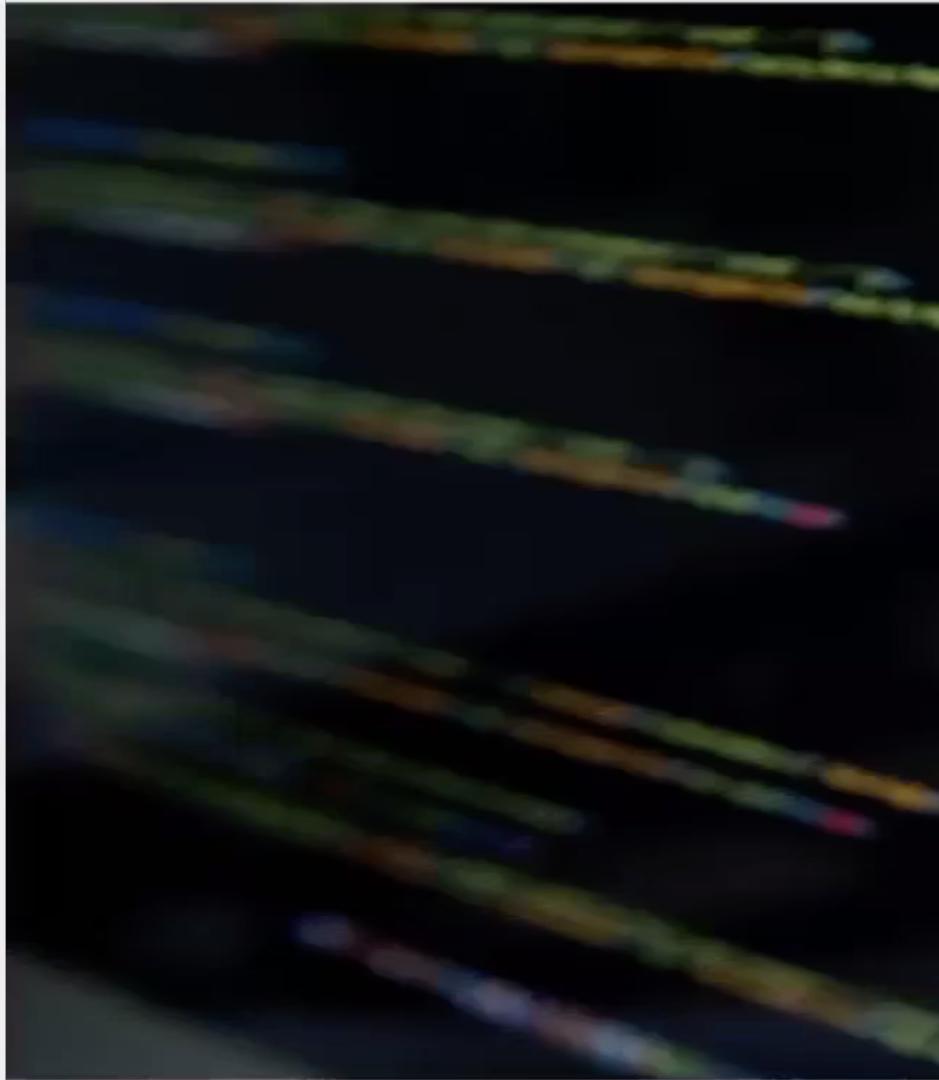
SVM-based classifier that uses TF-IDF features

BOWSVM

SVM-based classifier that uses bag-of-words features

MB

Learning to rank classifier with word features



CNNs for Sentence Classification

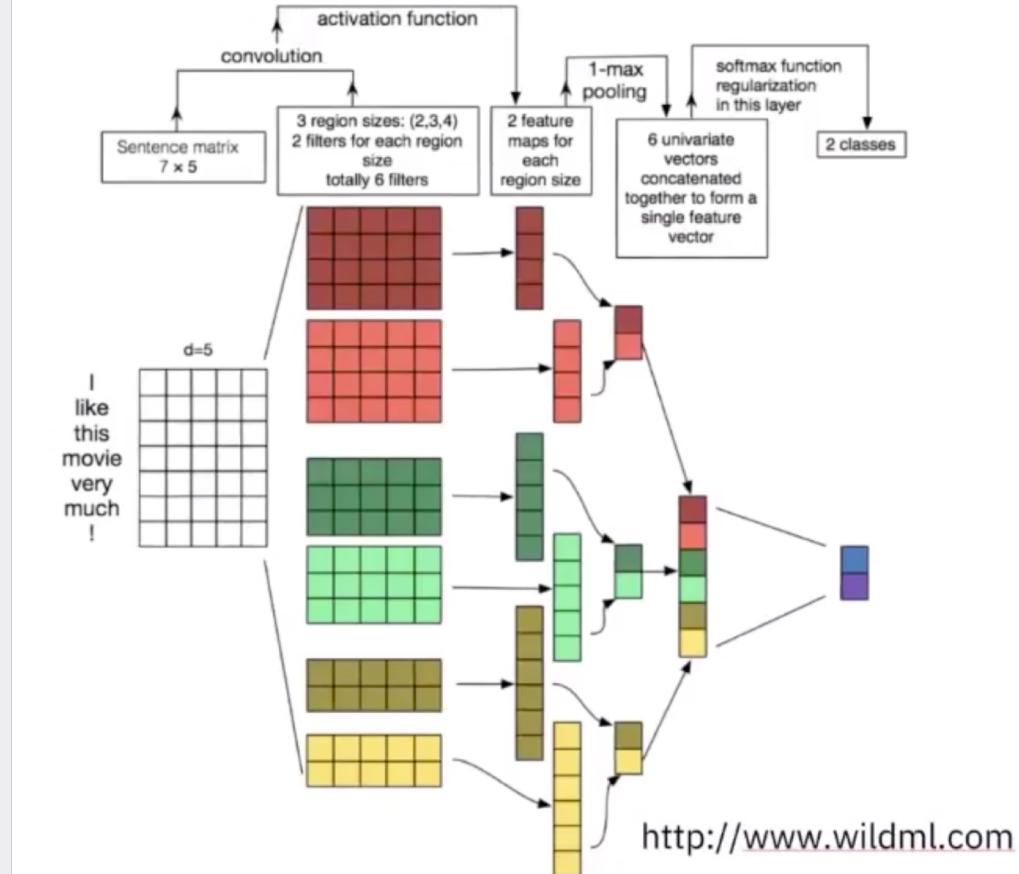
Commonly used for Computer Vision

CNNs work quite well for NLP tasks while providing state of the art performance in product.

Often slow to train with large amounts of training data without accelerators (GPUs).

Convolution operations

Implemented at hardware-level on GPUs consumed through new IBM DLaas service.



Demo

<https://natural-language-classifier-demo.ng.bluemix.net/>

Natural Language Classifier

Natural Language Classifier applies deep learning techniques to make predictions about the best predefined classes for short sentences or phrases.

 [Get Started](#) [API Reference](#) [Documentation](#) [Fork on GitHub](#)

[Start for free in IBM Cloud](#)

Ask a question about the weather

Watch the Natural Language Classifier categorize your weather-related question. In this demo, the classifier is trained to determine whether the question is related to `temperature` or `conditions`. The output includes the top classification and a confidence score.

Will it be snowing in Nice

Ask

* This system is for demonstration purposes only and is not intended to process Personal Data. No Personal Data is to be entered into this system as it may not have the necessary controls in place to meet the requirements of the General Data Protection Regulation (EU) 2016/679.

Resources

IBM Redbooks > Watson >

Building Cognitive Applications with IBM Watson Services: Volume 4 Natural Language Classifier

An IBM Redbooks publication

Published 25 May 2017

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