

# Twitter and Sentiment Analysis using RapidMiner

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EE406: CONTEMPORARY ECONOMIC ISSUES

SEMESTER 1/ 2021

FACULTY OF ECONOMICS, THAMMASAT UNIVERSITY

# Part 1: Installation of Operator Toolbox

<new process> – RapidMiner Studio Educational 9.10.001 @ DESKTOP-6V95GL8

File Edit Process View Connections Settings Extensions Help

Views: Design Results Turbo Prep Auto Model Deployments

Find data, operators...etc All Studio

Repository

- Import Data
- Training Resources (connected)
- Samples
- Community Samples (connected)
- Local Repository (Local)
- DB (Legacy)

Process

Process

Parameters

- Process
- logverbosity
- logfile
- Show advanced parameters
- Change compatibility (9.10.001)

Operators

Search for Operators

- Data Access (58)
  - Files (20)
  - Database (3)
- Applications (9)
  - Salesforce (4)
  - Twitter (4)
    - Search Twitter
    - Get Twitter User Statuses
    - Get Twitter User Details
    - Get Twitter Relations
- Trigger Zapier
- [Get more operators from the Marketplace](#)

Recommended Operators

- Retrieve 12%
- Select Attributes 6%
- Set Role 6%
- Apply Model 4%

Help

Search

Social

Tags: Conne

Synopsis

This operat

Twitter stat

Description

With the Se

operator w

Since the standard version of RapidMiner does not include the Sentiment Analysis tool, you have to install it by activating the Marketplace option.



**Repository** ×

+ Import Data

- ▶ Training Resources (connected)
- ▶ Samples
- ▶ Community Samples (connected)
- ▶ Local Repository (Local)
  - ▶ Connections
    - ▶ Twitter (11/17/21 7:00 AM)
  - ▶ data
  - ▶ processes
- ▶ DB (Legacy)

**Operators** ×

Search for Operators

- ▶ Data Access (58)
- ▶ Blending (82)
- ▶ Cleansing (28)
- ▶ Modeling (167)
- ▶ Scoring (14)
- ▶ Validation (30)
- ▶ Utility (85)
- ▶ Extensions (55)

Select components to install, both during the installation and during the workflow.

**Search** Updates Top Downloads

sentiment

- CoreNLP 0.3.6**  
This extension provides a simple mechanism to extract part-of-speech and named-entity-recognition tags.  
Not installed
- HanMiner 1.0.3**  
The HanMiner Extension provides an easy-to-use toolset to perform text processing and mining tasks in Mandarin (Han language).  
Not installed
- MeaningCloud Text Analytics**  
Integrate MeaningCloud's text analytics into your workflow.  
Not installed
- MonkeyLearn 1.0.6**  
MonkeyLearn is an AI platform that allows companies to easily analyze text using Machine Learning.  
Not installed
- Operator Toolbox 2.12.0**  
Operator Toolbox Extension: This extension couples a bunch of useful additional operators together.  
✔ Package is up to date

Use "sentiment" as the keyword.

Select "Operator Toolbox".

Please read and accept all terms of licenses to proceed with the installation.

**Selected for installation**

- Operator Toolbox 2.12.0  
License Type: AGPL

**License for Operator Toolbox**

GNU Affero General Public License - GNU Project - Free Software Foundation (FSF)

**GNU AFFERO GENERAL PUBLIC LICENSE**

Version 3, 19 November 2007

Copyright © 2007 Free Software Foundation, Inc. <<http://fsf.org/>>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

**Preamble**

The GNU Affero General Public License is a free, copyleft license for software and other kinds of works, specifically designed to ensure cooperation with the community in the case of network server software.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, our General Public Licenses are intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses

**Dependencies**

Accept the terms of all license agreements.

Install 1 packages

Don't install

**Select "Operator Toolbox".**

<new process> - RapidMiner Studio Educational 9.10.001 @ DESKTOP-6V956L6

File Edit Process View Connections Settings Extensions Help

RapidMiner Marketplace

Select components to install and update below. Updates to RapidMiner Studio will always be installed globally. Any global update requires administrator privileges, both during the update and the subsequent restart.

Search Updates Top Downloads Top Rated Purchased Bookmarks

sentiment Search

- Detect Outliers (Univariate) (bugfix in 2.12.0)
- Isolation Forest
- Tukey Test

**CoreNLP 0.3.6**  
This extension provides a simple mechanism to extract part-of-speech and named-entity-recognition tags from text.  
Not installed

**HanMiner 1.0.3**  
The HanMiner Extension provides an easy-to-use toolset to perform text processing and mining tasks in Mandarin (Han language).  
Not installed

**MeaningCloud Text Analytics**  
Integrate MeaningCloud's text analytics into your workflow.  
Not installed

**MonkeyLearn 1.0.6**  
MonkeyLearn is an AI platform that allows companies to easily analyze text with Machine Learning.  
Not installed

**Operator Toolbox 2.12.0**  
Operator Toolbox Extension: This extension couples a bunch of useful additional operators together.  
✓ Package is up to date

- Extract Topics from Documents (LDA) (bugfix in 2.12.0)
- Filter Tokens Using ExampleSet
- Split Document into Collection
- Stem Tokens Using ExampleSet

Utility

- Execute Remote Program (improved in 2.12.0)
- List Repository Objects
- Scan Processes

Select for installation [Go to extension homepage](#)

Download Complete

Updates for 1 packages downloaded. In order for updates to be installed, RapidMiner Studio must be restarted. Do you want to restart RapidMiner Studio now?

Yes  No

Install 0 packages

Get more operators from the Marketplace

Select Attributes 27% Write Excel 26% Process Documents from... 17%

With the search Twitter operator, you can specify a query and get Twitter statuses

After the installation, RapidMiner will require re-starting this software. Click on "Yes".

# Part 2: Downloading data from Twitter



The screenshot shows the RapidMiner Studio 9.10.001 interface. The 'Connections' menu is open, and the 'Create Connection' option is highlighted with a red circle. A red arrow points from this menu item to a text box that reads: "Select 'Connections' -> 'Create Connection'".

The interface includes a menu bar (File, Edit, Process, View, Connections, Settings, Extensions, Help), a toolbar with icons for file operations and process management, and several panels:

- Repository:** Shows a tree view of data sources including Training Resources, Samples, Community Samples, Local Repository, and DB (Legacy).
- Process:** The central workspace showing a 'Search Twitter' operator with input and output ports.
- Parameters:** A panel on the right for configuring the 'Process' operator, with fields for logverbosity, logfile, resultfile, random seed, send mail, and encoding.
- Operators:** A panel on the left for searching and selecting operators, categorized by Data Access, Files, Database, Applications, and Twitter.
- Recommended Operators:** A bottom panel showing suggested operators like 'Select Attributes', 'Write Excel', and 'Process Documents f...'.

The screenshot shows the RapidMiner Studio interface. The main window displays a process diagram with a 'Search Twitter' operator. A dialog box titled 'Create a new connection' is open, showing a list of connection types. The 'Twitter' option is selected and highlighted with a red dashed circle. A red arrow points from the text box below to this selection. The 'Parameters' panel on the right shows various settings for the process, and the 'Operators' panel on the left shows a list of available operators, including 'Search Twitter'.

File Edit Process View Connections Settings Extensions Help

Views: Design Results Turbo Prep Auto Model Deployments Find data, operators...etc All Studio

Repository

- Import Data
- Training Resources (connected)
- Samples
- Community Samples (connected)
- Local Repository (Local)
- DB (Legacy)

Process

Process

Search Twitter

Create a new connection

Connections are now objects that are stored in the repository. You can enter more details to your connection in the next steps.

Connection Type: Database Database Dropbox Email (send) Google Cloud Services MeaningCloud SFTP Connection Salesforce **Twitter**

Repository:

Connection Name:

Create Cancel

Parameters

Process

logverbosity: init

logfile:

resultfile:

random seed: 2001

send mail: never

encoding: SYSTEM

Hide advanced parameters

Change compatibility (9.10.001)

Help

Process

RapidMiner Studio Core

Synopsis

The root operator which is the outer most operator of every process.

Description

Each process must contain exactly one operator of this class, and it must be the root operator of the process. This operator provides a set of parameters that are of global

Operators

Search for Operators

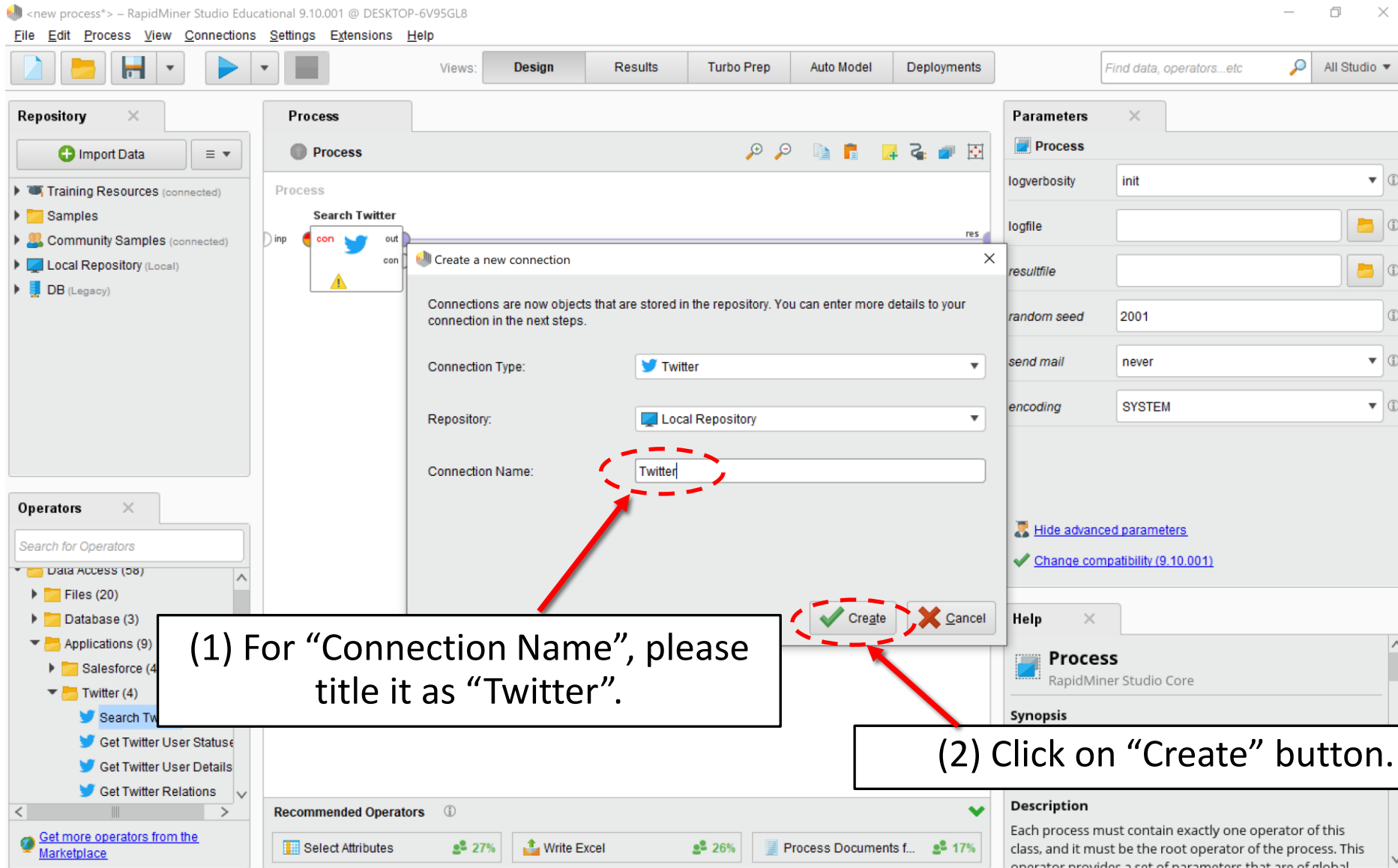
- Data Access (58)
- Files (20)
- Database (3)
- Applications (9)
- Salesforce (4)
- Twitter (4)
- Search Twitter
- Get Twitter User Status
- Get Twitter User Details
- Get Twitter Relations

Get more operators from the Marketplace

Recommended Operators

- Select Attributes 27%
- Write Excel 26%
- Process Documents f... 17%

For "Connection Type", select "Twitter".



(1) For "Connection Name", please title it as "Twitter".

(2) Click on "Create" button.

<new process\*> - RapidMiner Studio Educational 9.10.001 @ DESKTOP-6V95GL8

File Edit Process View Connections Settings Extensions Help

Views: Design Results Turbo Prep Auto Model Deployments Find data, operators...etc All Studio

**Repository**

- Training Resources (connected)
- Samples
- Community Samples (connected)
- Local Repository (Local)
  - Connections
    - Twitter ( 11/18/21 3:36 PM - 897)
  - data
  - processes
- DB (Legacy)

**Operators**

Search for Operators

- Data Access (38)
  - Files (20)
  - Database (3)
  - Applications (9)
    - Salesforce (4)
    - Twitter (4)
      - Search Twitter
      - Get Twitter User Status
      - Get Twitter User Details
      - Get Twitter Relations




[Get more operators from the Marketplace](#)

**Process**

Process

**Edit connection - Twitter**

Info Setup Sources

Access Token    

To setup the Twitter access, please click on this icon.

[Set injected parameters](#) An injected parameter is a parameter whose value is provided by an external source.

[Test connection](#) [Save](#) [Cancel](#)

**Parameters**

Process

logverbosity init

2001

never

SYSTEM

[ed parameters](#)

[patibility \(9.10.001\)](#)

**Synopsis**

The root operator which is the outer most operator of every process.

**Description**

Each process must contain exactly one operator of this class, and it must be the root operator of the process. This operator provides a set of parameters that are of global

**Recommended Operators**

- Select Attributes 27%
- Write Excel 26%
- Process Documents f... 17%

<new process\*> - RapidMiner Studio Educational 9.10.001 @ DESKTOP-6V95GL8

File Edit Process View Connections Settings Extensions Help

Views: Design Results Turbo Prep Auto Model Deployments

Find data, operators...etc All Studio

Repository

- Import Data
- Training Resources (connect)
- Samples
- Community Samples (connect)
- Local Repository (Local)
- Connections
  - Twitter (11/18/21 3:38 P
- data
- processes
- DB (Legacy)

Process

Edit connection - Twitter

Info Setup Sources

Access Token

OAuth

Authenticate RapidMiner via OAuth.

1 Open URL

Request access token

Show URL instead

2 Copy Code

Click on this button.

Test connection Complete Cancel Cancel

Operators

- Database (3)
- Applications (9)
  - Salesforce (4)
  - Twitter (4)
    - Search Twitter
    - Get Twitter User Status
    - Get Twitter User Details
    - Get Twitter Relations

Get more operators from the Marketplace

Recommended Operators

- Select Attributes 27%
- Write Excel 26%
- Process Documents f... 17%

Parameters

Process

- logverbosity init
- logfile
- resultfile
- random seed 2001
- send mail never
- encoding SYSTEM

Hide advanced parameters

Change compatibility (9.10.001)

Help

Process

RapidMiner Studio Core

Synopsis

The root operator which is the outer most operator of every process.

Description

Each process must contain exactly one operator of this class, and it must be the root operator of the process. This operator provides a set of parameters that are of global



### Authorize RapidMiner SocialMedia Extension to access your account?



#### RapidMiner SocialMedia Extension

By RapidMiner  
rapidminer.com/

Easy-to-use visual environment for predictive analytics. No programming required.

Authorize app

Cancel

**This application will be able to:**

- See Tweets from your timeline (including protected Tweets) as well as your Lists and collections.
- See your Twitter profile information and account settings.

page with Tweets  
to a Tweet,  
lections for

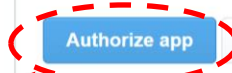
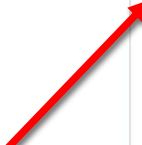
you.

- Mute, block, and report accounts for you.

Learn more about third-party app permissions in the [Help Center](#).

We recommend reviewing the app's terms and privacy policy to understand how it will use data from your Twitter account. You can revoke access to any app at any time from the [Apps and sessions](#) section of your Twitter account settings.

By authorizing an app you continue to operate under Twitter's [Terms of Service](#). In particular, some usage information will be shared back with Twitter. For more, see our [Privacy Policy](#).



You have to log in the Twitter service using your account, and click on “Authorize app” button.



You've granted access to RapidMiner SocialMedia Extension!

Next, return to RapidMiner SocialMedia Extension and enter this PIN to complete the authorization process:

**3738914**

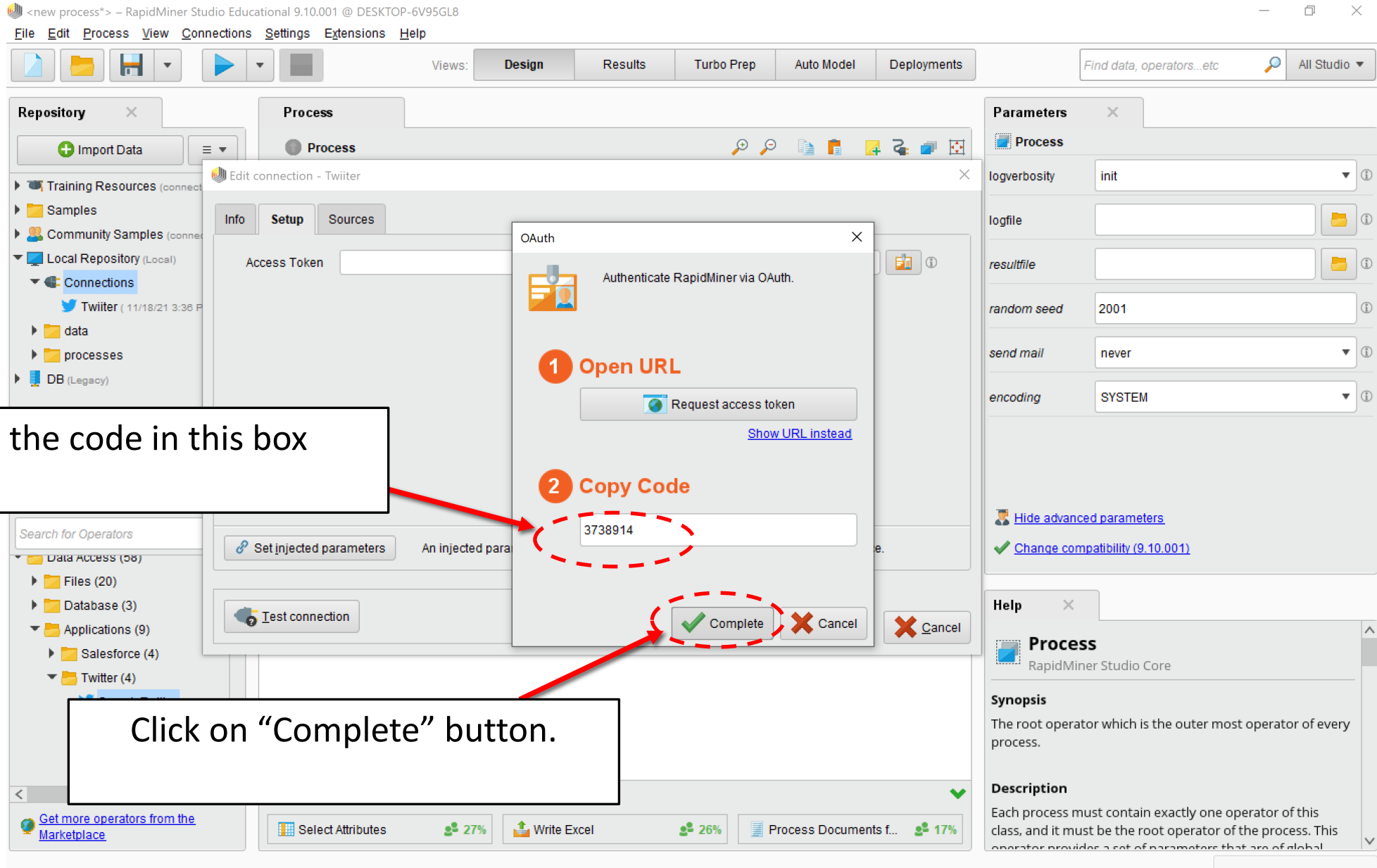
[Go to Twitter](#)

[Go to the RapidMiner SocialMedia Extension homepage](#)

We recommend reviewing the app's terms and privacy policy to understand how it will use data from your Twitter account. You can revoke access to any app at any time from the [Apps and sessions](#) section of your Twitter account settings.

By authorizing an app you continue to operate under Twitter's [Terms of Service](#). In particular, some usage information will be shared back with Twitter. For more, see our [Privacy Policy](#).

You will get the automatically generated code. Please copy that code.



Paste the code in this box

Click on "Complete" button.

<new process\*> - RapidMiner Studio Educational 9.10.001 @ DESKTOP-6V95GL8  
File Edit Process View Connections Settings Extensions Help

Views: Design Results Turbo Prep Auto Model Deployment

**Repository**

- Training Resources (connected)
- Samples
- Community Samples (connected)
- Local Repository (Local)
  - Connections
    - Twitter (11/18/21 3:38 PM - 1 KB)
  - data
  - processes
  - DB (Legacy)

**Process**

Process

Repository Browser

Select a repository location.

- Local Repository (Local)
  - Connections
    - Twitter (11/18/21 3:38 PM - 1 KB)

**Search Twitter**

source repository

entry

recent or popular

100

Name Twitter

Location /Local Repository/Connections/Twitter

OK Cancel

**Recommended Operators**

- Select Attributes 27%
- Write Excel 26%
- Process Documents f... 17%

**Search Twitter**

Synopsis

This operator searches for Twitter statuses.

Description

With the Search Twitter operator, you can specify a query and get Twitter statuses containing this query. The list of statuses contains additional data with context of the

(1) Click on this icon.

(2) Select "Twitter".

(3) Select "OK".

(1) In this example, we will download all tweets related to “COP26”, which is the latest global meeting on climate change policy

(2) We want to download the max number of 4,000 tweets.

(3) We want to download only messages written in English.

The screenshot shows the Orange Data Mining software interface. The main window is titled 'Process' and displays a workflow with a 'Search Twitter' operator. The 'Parameters' panel for this operator is open, showing the following settings: 'connection entry' is 'ry/Connections/Twitter', 'query' is 'cop26', 'result type' is 'recent or popular', 'limit' is '4000', 'since id' is empty, 'max id' is empty, and 'language' is 'en'. Red dashed circles and arrows highlight these specific settings. The 'Operators' panel on the left shows a search for 'sentiment' with results under 'Blending (1)', 'Attributes (1)', 'Generation (1)', 'Extensions (2)', and 'Operator Toolbox (2)'. The 'Help' panel on the right shows the 'Extract Sentiment' operator documentation, including a synopsis and a link to a tutorial process. The 'Recommended Operators' panel at the bottom shows 'Select Attributes' (27%), 'Write Excel' (26%), and 'Process Documents f...' (17%).

Views: Design Results Turbo Prep Auto Model Deployments Find data, operators...etc All Studio

**Repository**

- Import Data
- Training Resources (connected)
- Community Samples (connected)
- Samples
- Local Repository (Local)
- DB (Legacy)

**Process**

Search Twitter

inp con out res res

**Parameters**

- Search Twitter
- language: en
- locale: [empty]
- until: [empty]
- filter by geo location
- latitude: 52.52
- longitude: 13.405
- radius: 500.0
- radius unit: kilometers
- [Hide advanced parameters](#)
- [Change compatibility \(9.6.000\)](#)

**Operators**

Search for Operators

- Data Access (58)
- Files (20)
- Database (3)
- Applications (9)
- Salesforce (4)
- Twitter (4)
- Search Twitter
- Get Twitter User Status
- Get Twitter User Details
- Get Twitter Relations

[Get more operators from the Marketplace](#)

**Recommended Operators**

- Select Attributes 27%
- Write Excel 26%
- Process Documents f... 17%

**Help**

Search Twitter

Social Media

Tags: [Connection](#), [Twitter](#)

**Synopsis**

This operator searches for Twitter statuses.

**Description**

With the Search Twitter operator, you can specify a query and get Twitter statuses containing this query. The list of statuses contains additional data with context of the

(4) We select this option to identify the location of origin of tweets.

(5) We select the location of London as the location of messages' origin (with 500 km radius).

(6) Click on "run" button.

File Edit Process View Connections Settings Extensions Help

Views: Design **Results** Turbo Prep Auto Model Deployments Find data, or

Result History ExampleSet (Search Twitter) X

Filter (4,000 / 4,000 examples): all

(7) Click on "Results" tab. All related tweets are listed in the table exhibited below.

	User	To-User-Id	Language	Source	Text
3983	1460228638...	Nov 15, 2021 ...	♥Occupy♥#...	22875032 ?	-1 en <a href="http://...
3984	1460228630...	Nov 15, 2021 ...	Andrew Jone...	703081244 ?	-1 en <a href="http://...
3985	1460228630...	Nov 15, 2021 ...	Linda Zigrida ...	7687869660... ?	-1 en <a href="http://...
3986	1460228623...	Nov 15, 2021 ...	Simon Emilio ...	558545453 ?	-1 en <a href="http://...
3987	1460228622...	Nov 15, 2021 ...	Allie Bee	1080905528 ?	-1 en <a href="http://...
3988	1460228619...	Nov 15, 2021 ...	ShalomLou ♀	109400886 ?	-1 en <a href="http://...
3989	1460228619...	Nov 15, 2021 ...	Central Bank ...	466460836 VMRConstan...	564890401 en <a href="http://...
3990	1460228614...	Nov 15, 2021 ...	Yes for EU #...	1246437728... ?	-1 en <a href="http://...
3991	1460228610...	Nov 15, 2021 ...	Gary Elliot	917772990 ?	-1 en <a href="http://...
3992	1460228610...	Nov 15, 2021 ...	#News/#COP...	1221109638... STEM2Crisis	1221109638... en <a href="http://...
3993	1460228610...	Nov 15, 2021 ...	PWalker ♀♥	710625694 ?	-1 en <a href="http://...
3994	1460228607...	Nov 15, 2021 ...	Never Trust T...	185978662 ?	-1 en <a href="http://...
3995	1460228606...	Nov 15, 2021 ...	NewsPlayer+	1326561978... ?	-1 en <a href="http://...
3996	1460228605...	Nov 15, 2021 ...	EastMojo	8959669774... ?	-1 en <a href="http://...
3997	1460228605...	Nov 15, 2021 ...	High on Croq...	1170083228 ?	-1 en <a href="http://...
3998	1460228603...	Nov 15, 2021 ...	Frack Free Dee	2402046727 ?	-1 en <a href="http://...
3999	1460228601...	Nov 15, 2021 ...	moneycontrol	68927629 ?	-1 en <a href="http://...
4000	1460228600...	Nov 15, 2021 ...	Kevin Ditcham	41409747 ?	-1 en <a href="http://...

ExampleSet (4,000 examples, 1 special attribute, 11 regular attributes)

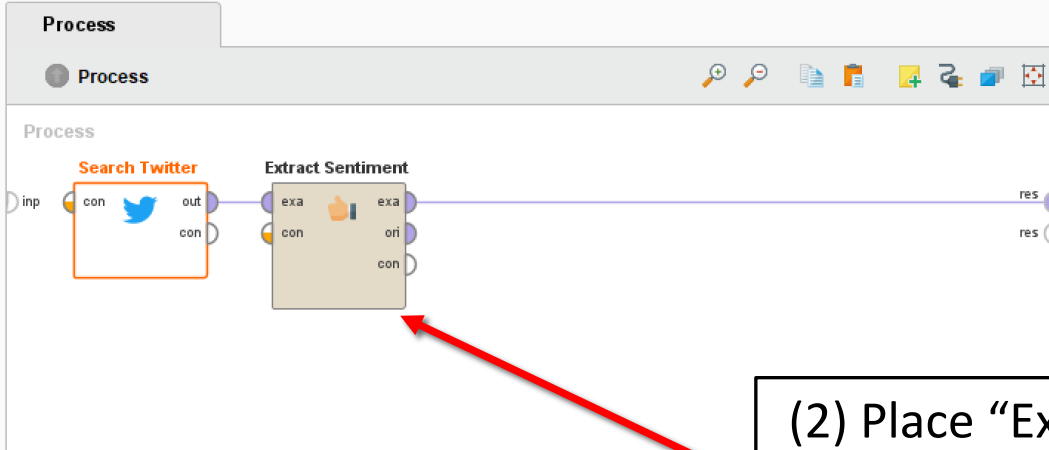
# Part 3: Computing Sentiment Index



**Repository**

Import Data

- Training Resources (connected)
- Community Samples (connected)
- Samples
- Local Repository (Local)
- DB (Legacy)



**Parameters**

**Search Twitter**

language: en

locale: [empty]

until: [empty]

filter by geo location

latitude: 13.7563

[Hide advanced parameters](#)

Change compatibility (9.6.000)

**Help**

**Search Twitter**

Social Media

Tags: Connection, Twitter

**Synopsis**

This operator searches for Twitter statuses.

**Description**

With the Search Twitter operator, you can specify a query and get Twitter statuses containing this query. The list of statuses contains additional data with context of the

(1) Select "Extract Sentiment" from Operator Toolbox/Text Processing.

(2) Place "Extract Sentiment" as the process located next to "Search Twitter".

Blending (1)

- Attributes (1)
- Generation (1)
- Text Vectorization

Extensions (2)

- Operator Toolbox (2)
- Text Processing (2)
- Dictionary-Based Sentir

We found "MeaningCloud Text Analytics" in the Marketplace. [Show me!](#)

**Recommended Operators**

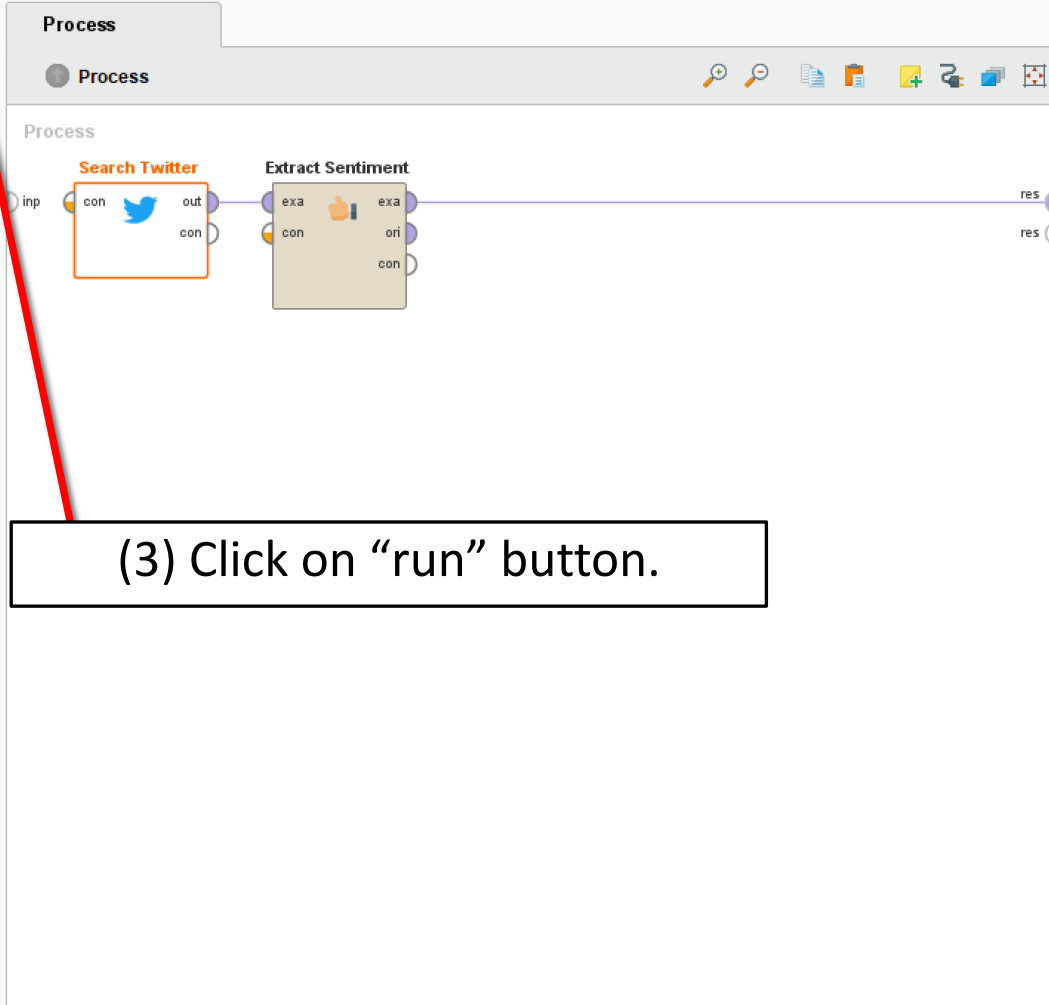
Select Attributes	43%
Retrieve	43%
Set Role	38%



**Repository**

+ Import Data

- Training Resources (connected)
- Community Samples (connected)
- Samples
- Local Repository (Local)
- DB (Legacy)



(3) Click on "run" button.

**Operators**

sentiment

- Blending (1)
- Attributes (1)
  - Generation (1)
    - Text Vectorization
- Extensions (2)
  - Operator Toolbox (2)
    - Text Processing (2)
      - Extract Sentiment
      - Dictionary-Based Sentir

We found "MeaningCloud Text Analytics" in the Marketplace. [Show me!](#)

**Recommended Operators**

Select Attributes	43%	Retrieve	43%	Set Role	38%
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Views: Design Results Turbo Prep Auto Model Deployments

Result History ExampleSet (Search Twitter)

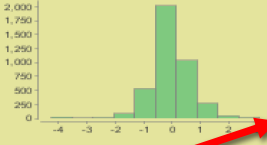
Turbo Prep Auto Model Filter (4,000 / 4,000 examples): all

	Id	Score	Created-At	From-User	From-User-Id	To-User	To-User-Id	Language	Source
1	1460305774...	-1.615	Nov 16, 2021 ...	Keir Starmer	2425571623	?	-1	en	<a href=
2	1460238182...	0.410	Nov 15, 2021 ...	Jeremy Corbyn	117777690	?	-1	en	<a href=
3	1460718447...	0.333	Nov 17, 2021 ...	Mark Ruffalo	47285504	?	-1	en	<a href=
4	1460763733...	0	Nov 17, 2021 ...	Glen Maney	106681314	?	-1	en	<a href=
5	1460763733...	0.821	Nov 17, 2021 ...	Val Astles/Do...	3437695749	?	-1	en	<a href=
6	1460763725...	-0.077	Nov 17, 2021 ...	Glenn Wright	1086520609	?	-1	en	<a href=
7	1460763707...	-1.487	Nov 17, 2021 ...	Carol	7530302344...	?	-1	en	<a href=
8	1460763707...	0.436	Nov 17, 2021 ...	Zimbabwe U...	319314644	?	-1	en	<a href=
9	1460763661...	0.128	Nov 17, 2021 ...	AtASP	3267886777	?	-1	en	<a href=
10	1460763634...	0.128	Nov 17, 2021 ...	IC Lee	2293515408	?	-1	en	<a href=
11	1460763633...	-0.282	Nov 17, 2021 ...	Mike Bradley	131887363	?	-1	en	<a href=
12	1460763608...	-1.615	Nov 17, 2021 ...	AndrEM	776821094	?	-1	en	<a href=
13	1460763593...	-0.103	Nov 17, 2021 ...	Living Eden ...	1375798670	?	-1	en	<a href=
14	1460763589...	0.590	Nov 17, 2021 ...	Naomi Kingst...	117866039	?	-1	en	<a href=
15	1460763587...	0.821	Nov 17, 2021 ...	Grumpy Gra...	1009048877...	?	-1	en	<a href=
16	1460763584...	0.462	Nov 17, 2021 ...	Rick D	4031948841	?	-1	en	<a href=
17	1460763584...	1.205	Nov 17, 2021 ...	Nickbee3241	1105969064...	?	-1	en	<a href=
18	1460763582...	0	Nov 17, 2021 ...	Woody	1420660507	?	-1	en	<a href=
19	1460763573...	0.333	Nov 17, 2021 ...	Woody	1420660507	?	-1	en	<a href=

ExampleSet (4,000 examples, 2 special attributes, 11 regular attributes)

(4) By selecting “Results”, the Sentiment Index is listed in “Score” column, quantifying the attitude of each tweet.

Result History ExampleSet (Search Twitter)

Name	Type	Missing	Statistics	Filter (13 / 13 attributes): Search for Attributes
Id	Nominal	0	Least 1460763738227855372... Most 1460228600976846848... Values 1460228600976846848 (1), 1	
<b>Prediction Score</b>	Real	0	 Min: -4.256 Max: 3.103 Average: 0.004	
Created-At	Date time	0	Earliest Nov 15, 2021 7:50 PM Latest date Nov 17, 2021 7:16 AM Duration 1d 11h 26m 27s	
From-User	Nominal	0	Least (1) Most malek (30) Values malek (30), Alexander Olav (1)	
To-User-Id	Nominal	0	Least 999431605 (1) Most 1445131045595189254... Values 1445131045595189254 (30),	
Language	Nominal	0	Least ziggy6769 (1) Most mariellaf1 (5) Values mariellaf1 (5), BorisJohnson (4)	
Source	Nominal	0	Least 997066424899301377 (... -1 (3805) Most -1 (3805) Values -1 (3805), 260760132 (5), ...[	

Showing attributes 1 - 13 Examples: 4,000 Special Attributes: 2 Regular Attributes: 11

Repository: Import Data, Training Resources, Community Samples, Samples, Local Repository (Local), DB (Legacy)

(6) By selecting "Statistics", the statistical summary of Sentiment Index is shown.