



NextGen
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Naive Bayes Model



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1. Introduction

NextGen Invent corporation is a leading global technology services provider. Our multi-disciplinary teams, Data Scientists, Change Agents, Strategists and Process Analysis framework are delivering Robotic Process Automation solution to its clients.

NGI in partnership with Automation Anywhere is delivering Stats/ML/AI/NLP/OR/Deep Learning models as ready to use Cloud Bots that are providing efficiencies across business processes, improved customer conversion rate and reduced churn rate.

1.1.Overview

This Bot performs text classification and real time predictions of various analytics problem using Naive Bayes as Machine learning model.

1.2.Use cases

- Naive Bayes algorithms are mostly used in sentiment analysis, spam filtering, recommendation systems etc.
- This bot could predict the posterior probability of multiple classes of the target variable to augment multi-class predictions.



2. Requirements & Prerequisites

2.1. System Requirements

For the PC or server where the bot needs to run:

Device	Processor	RAM	Storage	Network
Machine	Intel Core i5 or higher	8GB or higher	16GB	1GbE
Bot Creator and Bot Runner	No additions to the machine requirements	No additions to the machine requirements	No additions to the machine requirements	No additions to the machine requirements

2.2. Prerequisites

Software's required -

Automation Anywhere Plugin version	Excel Requirement Version
11.x	2013 version or higher

Data requirement-

Data should be pre-processed before feeding it to the bot and it should contain at least 4,000 rows for training with around 8-9 minimum features every time to obtain desired accuracy.



3. Getting Started

3.1. Skill Matrix

- As Naive Bayes is superfast, it can be used for making quick predictions in real time. The Naive Bayes algorithm affords fast, highly scalable model building and scoring. It scales linearly with the number of predictors and rows. The build process for Naive Bayes is parallelized.
- Naive Bayes algorithms are mostly used in sentiment analysis, spam filtering, recommendation systems etc.
- The Bot takes in the CSV file and performs the naïve bayes-based classification and output in the MS Excel

3.2. Installation Hierarchy

- Download the bot from Bot Store.
- Double click on the .msi file.
- On Welcome to Installation wizard, click Next to continue.
- Click I agree to the terms in the license agreement radio button to accept the agreement.
- Get/Copy the License key from Bot Store Downloads into License Key, click Next to continue.
- Click Install to begin the installation.
- Click Finish to complete the installation.
- To view the installation, go to 'My Tasks' folder on AAE Client to see bot files.

3.3. Configuration

Inputs:

Parameter	Type	Direction	Additional Info
Path	String	Input	Path of the CSV file For example: C:\~\ Womens Clothing E-Commerce Reviews.csv
ColumnCount	Numeric	Input	Count of columns available in CSV file being provided with input data
InputColumnNames	String	Input	Name of columns being provided in CSV file. For example: 'SNo','Clothing ID','Age','Title','Review Text','Rating','Recommended IND','Positive Feedback Count','Division Name','Department Name','Class Name'
InputColumnDataType	String	Input	Data Type of columns being provided in CSV file in the same order as column



			names. For example, 'Numeric','Numeric','Numeric','String','String','Numeric','Numeric','Numeric','String','String','String','String'
MissingNumberValueReplacement	String	Input	A value that can be used by Model in case CSV file has blank field/s or missing numerical value/s.
IgnoreColumns	String	Input	Names of the column that model should ignore while calculating correlation. For example: 'SNo', 'Title', 'Review Text'
PredictionColumnName	String	Input	Header of the Column on which you want to predict Ex: "Department Name"

Input Sample:

The below dataset contains information about the Women clothing i.e. basically which type of clothes women mostly wears and this is the dataset for E-Commerce Company for the production of the clothes. The following data is described using the mentioned features:

SNo	Clothing ID	Age	Title	Review Text	Rating	Recommended IND	Positive Feedback Count	Division Name	Department Name	Class Name
171	1020	41	Runs very small	My waist measures 28" and the size 4 is a snug fit	4	1	4	GeneralPetite	Bottoms	Skirts
172	895	47	Pretty	I love the fabric and color (i bought the green one)	4	1	0	GeneralPetite	Tops	Fine gauge
173	895	52	Nice but too thin	I was minimally torn over whether to return this but	2	0	3	GeneralPetite	Tops	Fine gauge
174	895	46			5	1	0	GeneralPetite	Tops	Fine gauge
175	1020	22		I love the color of this skirt, and the fabric is wonder	5	1	1	GeneralPetite	Bottoms	Skirts
176	1038	40		Dress ran very large in every way. beautiful design	3	1	0	General	Dresses	Dresses
177	895	62	Lovely and feminine	Finally a "swing top" that doesn't look like a sack c	5	1	9	GeneralPetite	Tops	Fine gauge
178	862	26	A great piece	I bought this shirt in the neutral and white and lov	5	1	2	GeneralPetite	Tops	Knits
179	1020	38	Love everything about i	Unlike the other reviewers, I did not have any prob	5	1	3	GeneralPetite	Bottoms	Skirts
180	895	53	Perfect comfy now top!	For a now feel, that comfy and well made, this wa	5	1	0	General	Tops	Fine gauge
181	858	39	Cagrcoral shimmer fun	I added this in my basket at hite last minute to see w	5	1	1	GeneralPetite		Knits
182	1095	39		This dress is perfect! so pretty and flattering.	5	1	2	GeneralPetite		Dresses
183	853	41	Looks great with white	Took a chance on this blouse and so glad I did. it	5	1	0	General		Blouses
184	1080	55	I'm torn!	I'm upset because for the price of the dress, I thou	4	1	14	General		Dresses
185	949	33	Huge disappointment	I have been waiting for this sweater coat to ship b	2	0	0	General		Sweaters
186	1060	33		Beautifully made pants and on trend with the fash	5	1	0	GeneralPetite		Pants
187	697	39	Love this dress!	This is such a neat dress. the color is great and th	5	1	0	Intimates		Lounge
188	684	36		Super cute and comfy pull over. sizing is accurat	5	1	2	Intimates		Lounge
189	89	67	Some things you shoul	First, this is thermal, so naturally I didn't expect su	4	1	1	Intimates		Sleep
190	862	33	Love the embroidery!	Really cute top! the embroidery on the collar & b	5	1	0	General		Knits
191	862	39	Flattering and comforta	Very soft and comfortable. the shirt has an unus.	5	1	34	General		Knits
192	368	33		I am pregnant and i thought this would be a great	2	0	3	Intimates		Intimates
193	1095	36		I got this in the petite length, size o, and it fit just s	4	1	0	GeneralPetite		Dresses
194	368	52	Soft and comfortable	I've been looking for bralettes that provide some s	4	1	1	Intimates		Intimates

Outputs:

1. Output: the result in the form of the MS Excel

Using the above dataset, we are predicting the type of dress women mostly likes to wear and thus the below predicted has been the output with some of the different features described:

- Gold_Class: This column is taken as the predicted target based on preference



- Predicted_Class: This tells us the predicted type of the women cloth that she likes to wear i.e. Tops, Bottoms, etc based on preference

2. Provided the predictive class for effective decision making

Output Sample:

SNo	Clothing ID	Age	Title	Review Text	Rating	Recommended IND	Positive Feedback Count	Division Name	Gold_Class	Class Name	Predicted_Class
171	1020	41	Runs very small	My waist measures 28" and the size 4 is a snug fit	4	1	4	General Petite	Bottoms	Skirts	Bottoms
172	895	47	Pretty	I love the fabric and color I bought the green one	4	1	0	General Petite	Tops	Fine gauge	Tops
173	895	52	Nice but too thin	I was minimally torn over whether to return this but	2	0	3	General Petite	Tops	Fine gauge	Tops
174	895	46			5	1	0	General Petite	Tops	Fine gauge	Tops
175	1020	22		I love the color of this skirt, and the fabric is wonder	5	1	1	General Petite	Bottoms	Skirts	Bottoms
176	1036	40		Dress ran very large in every way. beautiful design	3	1	0	General	Dresses	Dresses	Dresses
177	895	62	Lovely and feminine	Finally a "swing top" that doesn't look like a sack	5	1	9	General Petite	Tops	Fine gauge	Tops
178	862	26	A great piece	I bought this shirt in the neutral and white and love	5	1	2	General Petite	Tops	Knits	Tops
179	1020	38	Love everything about it	Unlike the other reviewers, I did not have any prob	5	1	3	General Petite	Bottoms	Skirts	Bottoms
180	895	53	Perfect comfy now top!	For a now feel, that comfy and well made, this was	5	1	0	General	Tops	Fine gauge	Jackets
181	858	39	Cargoal shimmer fun	I added this in my basket at the last minute to see w	5	1	1	General Petite		Knits	Tops
182	1095	39		This dress is perfect! so pretty and flattering.	5	1	2	General Petite		Dresses	Dresses
183	853	41	Looks great with white	Took a chance on this blouse and so glad I did. it is	5	1	0	General		Blouses	Jackets
184	1080	55	I'm torn!	I'm upset because for the price of the dress, I tho	4	1	14	General		Dresses	Dresses
185	949	33	Huge disappointment	I have been waiting for this sweater coat to ship f	2	0	0	General		Sweaters	Tops
186	1060	33		Beautifully made pants and on trend with the flare	5	1	0	General Petite		Pants	Bottoms
187	697	39	Love this dress!	This is such a neat dress. the color is great and th	5	1	0	Intimates		Lounge	Intimate
188	684	36		Super cute and comfy pull over. sizing is accurat	5	1	2	Intimates		Lounge	Intimate
189	89	67	Some things you should	First, this is thermal, so naturally I didn't expect su	4	1	1	Intimates		Sleep	Intimate
190	862	33	Love the embroidery!	Really cute top! the embroidery on the collar & bil	5	1	0	General		Knits	Jackets
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192	368	33		I am pregnant and I thought this would be a great	2	0	3	Intimates		Intimates	Intimate
193	1095	36		I got this in the petite length, size 0, and it fit just ri	4	1	0	General Petite		Dresses	Dresses
194	368	52	Soft and comfortable	I've been looking for bralettes that provide some s	4	1	1	Intimates		Intimates	Intimate

4. Logs

Error Handling In case of Errors, Error Logs & Screenshots are generated within Error Folder.

Each Bot folder contains the below hierarchy.

1 Error Folder

1.1 Logs

1.1.1 ErrorLogsMonth-Day-Year.txt: In case of any error, this file logs error message along with timestamp

1.2 Snapshots

1.2.1 Error SnapMonth-Day-Year-Hour-Minute-SecondMillisecond.png: In case of any error, this file captures screenshot of error.

Task Status of bot is set to failed in case of error.



5. Troubleshooting & Support

5.1 Support

Please Email bot.support@nextgeninvent.com for any support related questions.



Appendix A - Record of Changes

Version #	Date of Change	Author	Notes
V1.0	June 26 th 2020	Nextgen Invent Corporation	

Appendix B - Acronyms

#	Acronym	Description
1.	AA	Automation Anywhere
2.	API	Application Programming Interface
3.	RAM	Random Access Memory
4.	OS	Operating System

Appendix C - References

#	Topic	Reference Link
1.	Nextgen Invent Corporation	https://www.nextgeninvent.com/

