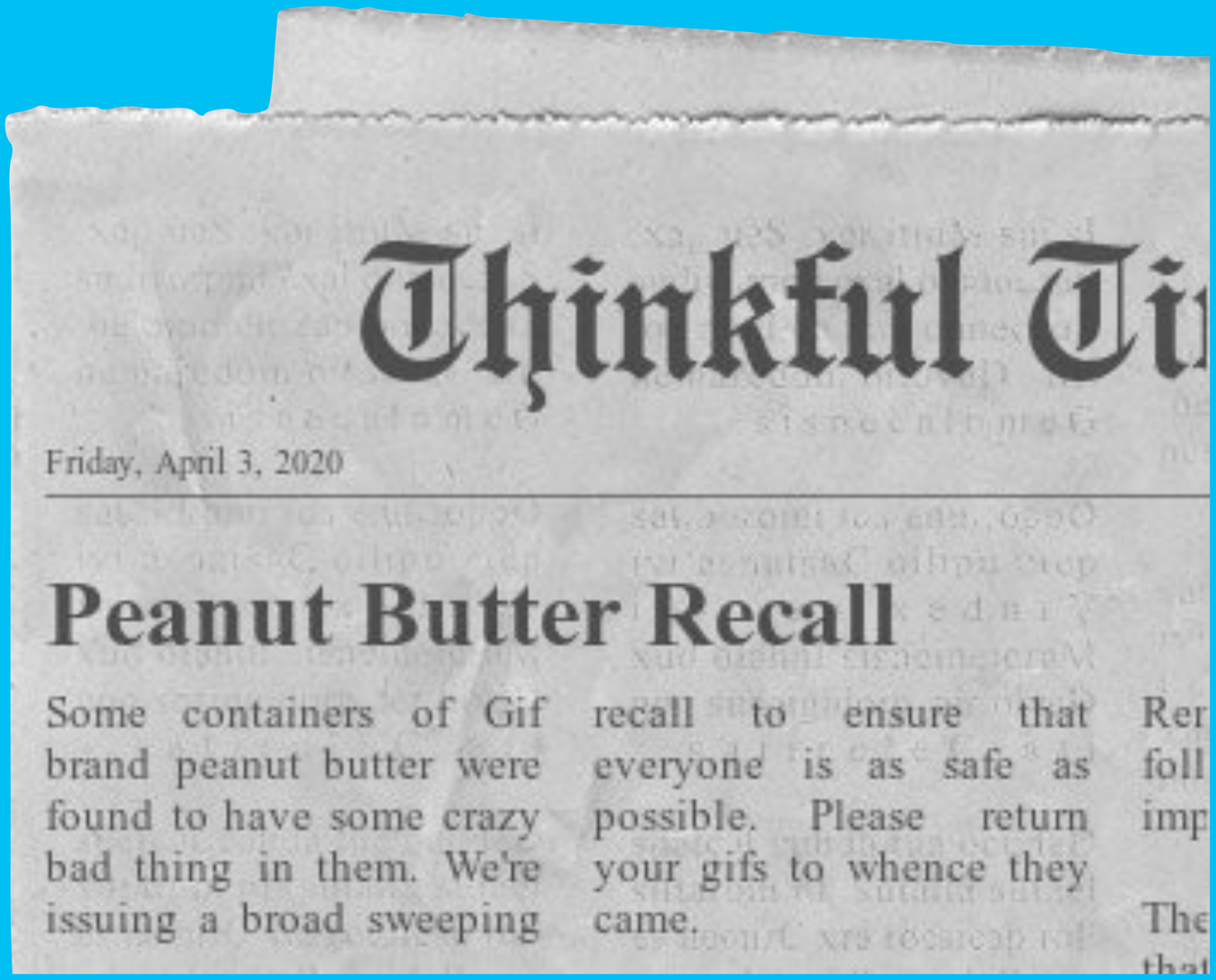


Thinkful Ti

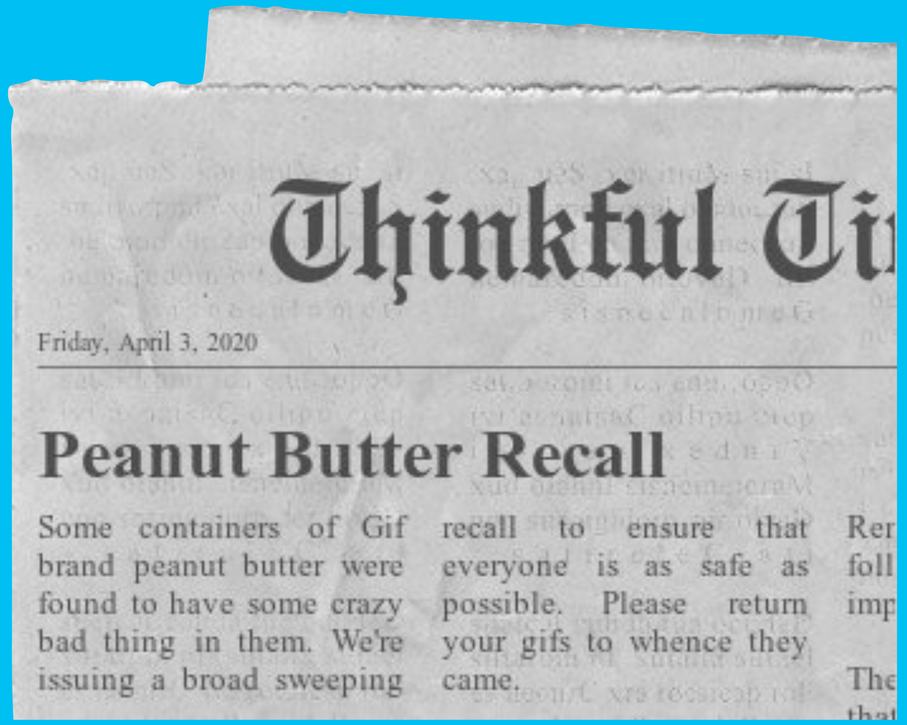
Friday, April 3, 2020

Peanut Butter Recall

Some containers of Gif brand peanut butter were found to have some crazy bad thing in them. We're issuing a broad sweeping recall to ensure that everyone is as safe as possible. Please return your gifs to whence they came.

Rer
foll
imp

The
that



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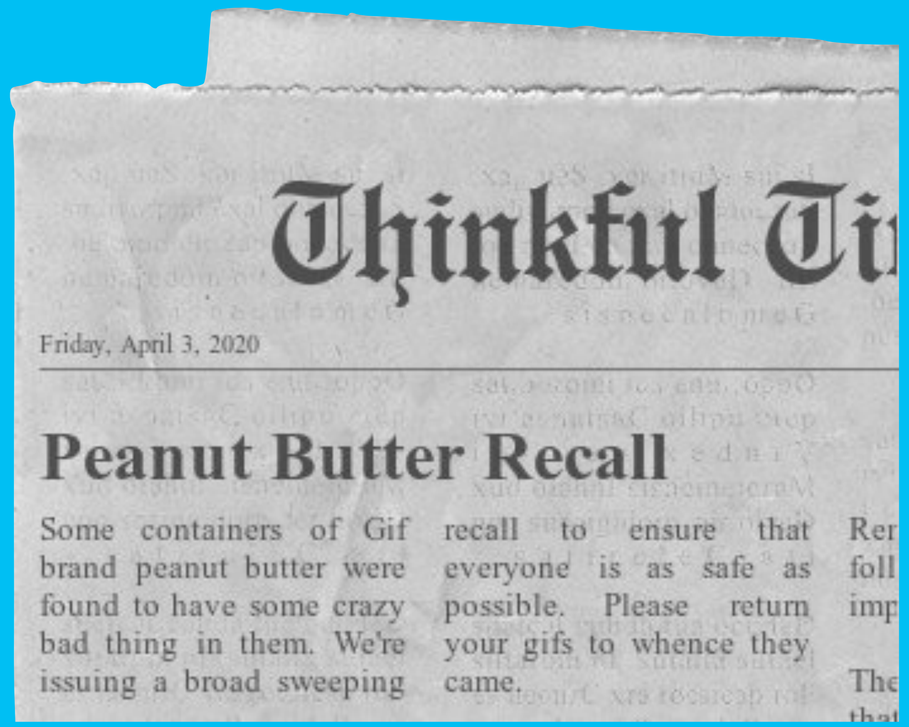
Ren
foll
imp

The
that

Contaminated

Creamy Goodness

What people are returning:



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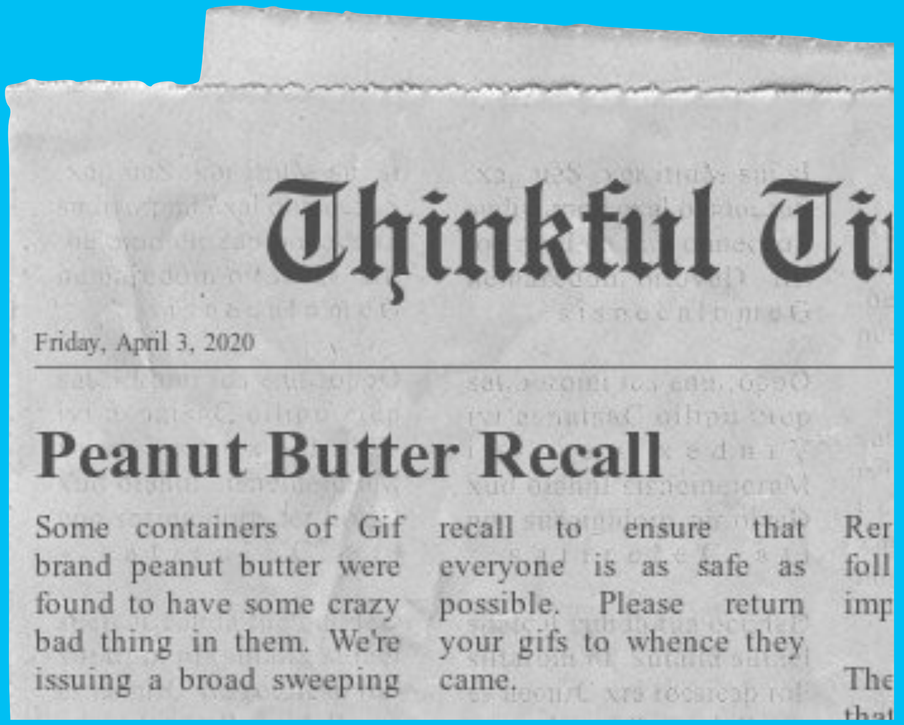
foll
imp

The
that

14 - Contaminated

Creamy Goodness

What people are returning:



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Friday, April 3, 2020

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Rer
foll
imp

The
that

14 - Contaminated

7 - Creamy Goodness

What people are returning:

14 = 66%

7 = 33%

Peanut Butter Contamination Confusion Matrix

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

14 = 66%

7 = 33%

Was this 'precise'?

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

14 = 66%

7 = 33%

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive
FP = False Positive

14 = 66%

7 = 33%

aka all predicted positives

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive
FP = False Positive

14 = 66%

7 = 33%

This is also sometimes referred to as sensitivity

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive
FP = False Positive

14 = 66%

7 = 33%

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FP = False Positive

14 = 66%

7 = 33%

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FP = False Positive = 7

14 = 66%

7 = 33%

In ML, precision is: TP / (TP + FP)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FP = False Positive = 7

precision = 14 / (14 + 7) = 66%

14 = 66%

7 = 33%

Was this a successful recall?

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

14 = 66%

7 = 33%

In ML, recall is: TP / (TP + FN)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive
FN = False Negative

14 = 66%

7 = 33%

aka all actual positives

In ML, recall is: TP / (TP + FN)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive
FN = False Negative

14 = 66%

7 = 33%

In ML, recall is: TP / (TP + FN)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FN = False Negative

14 = 66%

7 = 33%

In ML, recall is: TP / (TP + FN)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FN = False Negative = 0

14 = 66%

7 = 33%

In ML, recall is: TP / (TP + FN)

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

TP = True Positive = 14
FN = False Negative = 0

recall = 14 / (14 + 0) = 100%

14 = 66%

7 = 33%

precision = 66% **recall = 100%**

	Not Recalled	Recalled
Not Contaminated	0	7
Contaminated	0	14

What are some example machine learning applications where you'd prefer:

precision > recall

What are some example machine learning applications where you'd prefer:

precision < recall

medicine - detecting a disease - prefer recall

* Implication of a false negative:
    * Send a sick person home thinking they're healthy
* Implication of a false positive:
    * Patient comes in for a second test to confirm result

	Predicted no disease	**Predicted disease**
Actually disease free	10	40
Actually has disease	3	100

autopiloted car - detecting a green light - prefer precision

* Implication of a false negative:
    * Car doesn't move when light turns green
* Implication of a false positive:
    * Car takes off into a potentially busy intersection

	Predicted no green light	**Predicted green light**
Actually yellow/red light	10	3
Actually green light	40	100