

```
In [1]: import torch
```

```
In [64]: # Check if CUDA is available
if torch.cuda.is_available():
    # Get the number of available CUDA devices
    num_devices = torch.cuda.device_count()
    print("Number of CUDA devices:", num_devices)

    # Iterate over each CUDA device and print details
    for i in range(num_devices):
        device = torch.device(f"cuda:{i}")
        print(f"CUDA Device {i}: {torch.cuda.get_device_name(i)}")
        print(f"Memory Usage - Allocated: {torch.cuda.memory_allocated(device)} bytes")
        print(f"Memory Usage - Cached: {torch.cuda.memory_reserved(device)} bytes\n")
```

```
Number of CUDA devices: 1
CUDA Device 0: NVIDIA GeForce RTX 4060 Laptop GPU
Memory Usage - Allocated: 6834670592 bytes
Memory Usage - Cached: 22779265024 bytes
```

```
In [63]: import pandas as pd
from transformers import BertTokenizer, T5Tokenizer, BertForSequenceClassification,
import torch
from torch.utils.data import DataLoader, Dataset
from transformers import AdamW, get_linear_schedule_with_warmup
from sklearn.model_selection import train_test_split
from tqdm import tqdm
```

```
In [4]: # Load the CSV dataset
df = pd.read_csv('C:/Users/karthik/Downloads/sample.csv')
```

```
In [88]: print(df.head(100))
```

	Id	ProductId	UserId	ProfileName
0	1	B001E4KFG0	A3SGXH7AUHU8GW	delmartian
1	2	B00813GRG4	A1D87F6ZCVE5NK	dll pa
2	3	B000LQOCH0	ABXLMWJIXXAIN	Natalia Corres "Natalia Corres"
3	4	B000UA0QIQ	A395BORC6FGVXV	Karl
4	5	B006K2ZZ7K	A1UQRSCLF8GW1T	Michael D. Bigham "M. Wassir"
5	6	B006K2ZZ7K	ADT0SRK1MG0EU	Twoapennything
6	7	B006K2ZZ7K	A1SP2KVKFXXR01	David C. Sullivan
7	8	B006K2ZZ7K	A3JRGQVEQN31IQ	Pamela G. Williams
8	9	B000E7L2R4	A1MZY09TZK0BBI	R. James
9	10	B00171APVA	A21BT40VZCCYT4	Carol A. Reed
10	11	B0001PB9FE	A3HDK070W0QNK4	Canadian Fan
11	12	B0009XLVG0	A2725IB4YY9JEB	A Poeng "SparkyGoHome"
12	13	B0009XLVG0	A327PCT23YH90	LT
13	14	B001GVISJM	A18ECVX2RJ7HUE	willie "roadie"
14	15	B001GVISJM	A2MUGFV2TDQ47K	Lynrie "Oh HELL no"
15	16	B001GVISJM	A1CZX3CP8IKQIJ	Brian A. Lee
16	17	B001GVISJM	A3KLWF6WQ5BNY0	Erica Neathery
17	18	B001GVISJM	AFKW14U97Z6Q0	Becca
18	19	B001GVISJM	A2A9X58G2GTBLP	Wolfee1
19	20	B001GVISJM	A3IV7CL2C13K2U	Greg
20	21	B001GVISJM	A1W00KGLPR5PV6	mom2emma
21	22	B001GVISJM	AZOF9E17RGZH8	Tammy Anderson
22	23	B001GVISJM	ARYVQL4N737A1	Charles Brown
23	24	B001GVISJM	AJ6130LZZUG7V	Mare's
24	25	B001GVISJM	A22P2J09NJ9HKE	S. Cabanaugh "jilly pepper"
25	26	B001GVISJM	A3FONPR03H3PJS	Deborah S. Linzer "Cat Lady"
26	27	B001GVISJM	A3RXAU2N8KV45G	lady21
27	28	B001GVISJM	AAAS38B98HMIK	Heather Dube
28	29	B00144C10S	A2F4LZVGFLD10B	DaisyH
29	30	B0001PB9FY	A3HDK070W0QNK4	Canadian Fan
30	31	B003F6U07K	AFM009480F04W	Sherril
31	32	B003F6U07K	A310Q0709M20Y7	Molly V. Smith "staral"
32	33	B001E05QW8	AOVROBZ8BNTP7	S. Potter
33	34	B001E05QW8	A3PMM0NFVEJGK9	Megan "Bad at Nicknames"
34	35	B001E05QW8	A2EB60GOWCRU5H	CorbyJames
35	36	B001E05QW8	A2CI0RLACDRKPF	T. J. Ryan
36	37	B001E05QW8	A1MYS9LFFBIYKM	Abby Chase "gluten free"
37	38	B001E05QW8	A3MGP2E1ZZ6GRB	Zardoz "focuspuller"
38	39	B001E05QW8	A2GHZ2UTV2B0CD	JERRY REITH
39	40	B001E05QW8	A080AC8313NIZ	kYpondman
40	41	B001E05QW8	AQCY5KR07489S	Garrett
41	42	B001E05QW8	A1WK4ALVZDYPUE	Dick Baldwin "christobe"
42	43	B001E05QW8	A16XF0YQSJREL7	Roger Pugliese
43	44	B001E05QW8	A17DW6SUOC70DJ	Mother of 9
44	45	B001E05QW8	A2G7B7FKP202PU	D. Leschke
45	46	B001E05QW8	A39Z97950MCTQE	K. A. Freel
46	47	B001E05QW8	AQLL2R1PPR46X	grumpyrainbow
47	48	B001E05QW8	A26AY1TFK8BQXQ	kbogo "shoelover"
48	49	B001E05QW8	AL0R97KTZTK1P	knitty pants
49	50	B001E05QW8	A276999Y6VRSCQ	JMay
50	51	B001E05QW8	A108P30XVUFKXY	Roberto A
51	52	B000G6RPMY	A3S5KJDA6ED2PS	Mike Kaser
52	53	B000G6RPMY	A9L6L5H9BPEBO	Edwin C. Pauzer
53	54	B000G6RPMY	AQ9DWYWYP2KJCQ	Roel Trevino "protomex"
54	55	B002GWHC0G	A1ND7WC5LX0U48	David Belton "Proteus 1"

55	56	B002GWHC0G	A2EFAW1P3DRXW0	TJ Fairfax
56	57	B004N5KULM	A202WR509428VF	amateur amazon shopper
57	58	B004N5KULM	ASCNNAJU6SXF8	S. Beck
58	59	B004N5KULM	A2A7KXM9B4XW90	P. Kelso "Amazon all the way!"
59	60	B004N5KULM	A2QOGOXPOVKAJG	mimimc
60	61	B004N5KULM	A1ZR8062VSU4OK	Lisa J. Szlosek "lisa"
61	62	B004N5KULM	A7ZK2A3VIW7X9	Peggy
62	63	B001E05TPM	A1E09XGZUR78C6	gary sturrock
63	64	B005DUM9UQ	A3HR0ZZ0FKQ97N	RLC
64	65	B005DUM9UQ	A2XIHNXODNZGV4	ChemProf "chem professor"
65	66	B005DUM9UQ	A3TWF9DQ6MU87E	dhy4b
66	67	B005DUM9UQ	AEFIZIJ1FK1BK	Doug
67	68	B005DUM9UQ	A8OFFIAL6XT0H	Bill Shirer
68	69	B000E7VI7S	A1KL2LAW08X6UQ	calmnse
69	70	B000E7VI7S	AWCBF2ZWIN57F	C. Salcido
70	71	B001GVISJC	A27TKQHFW0FB5N	Chet
71	72	B001GVISJC	A3BDOAPSF96WGQ	2tall
72	73	B006SQBRMA	ATYMT48R62ENE	Marie
73	74	B0059WXJKM	A25VFHVGI4CFTP	Diana Robinson
74	75	B001EPPI84	A3Q0IDQ03S0158	Jen
75	76	B001EPPI84	A27TZ4WBU7N0YF	I. So
76	77	B004X2KR36	A2W3ABLWMJ84NS	Jessica Snyder
77	78	B004X2KR36	A26M5053PHZTKN	Debs "peanut"
78	79	B004X2KR36	A2AB7M9UCNBVN7	sharonh4
79	80	B005R8JE80	A3H1EQD2PBC085	jmc
80	81	B0066DMI6Y	AB30HQT15VOLR	Melinda Bishop
81	82	B0066DMI6Y	AZLONLC80ZPEC	John W. Hollis
82	83	B003ZFRKG0	A2V0ZX7YBT0D6D	Johnnycakes "Johnnycakes"
83	84	B0019CW0HE	A1FD9E5C06UB6B	BRENDA DEMERS
84	85	B0019CW0HE	AK2CXHH9VRZ2A	I. GLENN
85	86	B0019CW0HE	A25BGFRHYHEZKK	Toby's mom
86	87	B0019CW0HE	A37N9XZBB8JYOF	Ash52
87	88	B0019CW0HE	A1T4L0Q47OZ9N	Wendy
88	89	B0019CW0HE	A3IMXZE9FCUNOC	Dana
89	90	B0019CW0HE	A1EC57S6C2VLT	Lorraine "Agelechio"
90	91	B0019CW0HE	A10GD72Y2Y26CF	Lisas201
91	92	B0019CW0HE	A7JWCYVPF7KCO	gare
92	93	B0019CW0HE	ABG53EBZBKD23	J. Romagnoli "*jroma"
93	94	B0019CW0HE	A3AF72GP4GVRY1	John D. Meara
94	95	B0019CW0HE	A1DJAAKLPCLRZD	wendy
95	96	B0019CW0HE	A1BFNM27629VAV	E. Triebe
96	97	B0019CW0HE	A18AAABC1JKC5Q	Rhiever
97	98	B0019CW0HE	A3UII2114114PI	FuNky Faja "SiLkk"
98	99	B0019CW0HE	ABZ9F0D94YK45	Amazon-tron 3000
99	100	B0019CW0HE	A2P6ACFZ8FTNVV	Melissa Benjamin

	HelpfulnessNumerator	HelpfulnessDenominator	Score	Time	\
0		1	1	5	1303862400
1		0	0	1	1346976000
2		1	1	4	1219017600
3		3	3	2	1307923200
4		0	0	5	1350777600
5		0	0	4	1342051200
6		0	0	5	1340150400
7		0	0	5	1336003200
8		1	1	5	1322006400

9	0	0	5	1351209600
10	1	1	5	1107820800
11	4	4	5	1282867200
12	1	1	1	1339545600
13	2	2	4	1288915200
14	4	5	5	1268352000
15	4	5	5	1262044800
16	0	0	2	1348099200
17	0	0	5	1345075200
18	0	0	5	1324598400
19	0	0	5	1318032000
20	0	0	5	1313452800
21	0	0	5	1308960000
22	0	0	5	1304899200
23	0	0	5	1304467200
24	0	0	5	1295481600
25	0	0	5	1288310400
26	0	1	1	1332633600
27	0	1	4	1331856000
28	0	0	5	1338854400
29	1	1	5	1107820800
30	0	0	5	1297641600
31	0	1	5	1288310400
32	19	19	4	1163376000
33	13	13	4	1166313600
34	9	9	5	1175212800
35	3	3	4	1210464000
36	2	2	5	1190851200
37	1	1	5	1238457600
38	0	0	4	1350777600
39	0	0	5	1317168000
40	0	0	5	1303430400
41	0	0	5	1302134400
42	0	0	5	1287014400
43	0	0	5	1255392000
44	0	0	5	1209686400
45	0	0	3	1205193600
46	0	0	5	1192752000
47	1	2	3	1200096000
48	1	2	4	1191715200
49	0	1	3	1334016000
50	0	7	1	1203379200
51	4	4	5	1243900800
52	1	1	4	1348876800
53	0	0	3	1278028800
54	2	2	4	1322438400
55	0	0	5	1349395200
56	2	2	5	1322438400
57	1	1	5	1336176000
58	0	0	5	1320364800
59	0	0	5	1320105600
60	2	4	3	1318723200
61	0	2	5	1319414400
62	2	2	1	1215302400
63	3	3	5	1333497600
64	1	1	5	1333584000

65	1	1	5	1331510400
66	0	0	5	1345161600
67	0	1	2	1338422400
68	0	0	3	1169251200
69	0	2	5	1185753600
70	2	2	5	1254355200
71	1	1	5	1289260800
72	0	0	5	1327017600
73	0	1	1	1335744000
74	0	0	2	1287705600
75	0	0	1	1275004800
76	0	0	5	1348444800
77	0	0	5	1348185600
78	0	0	3	1346976000
79	0	0	5	1344902400
80	1	1	5	1325116800
81	1	1	4	1324598400
82	15	15	5	1325635200
83	5	5	3	1301011200
84	4	4	3	1313193600
85	4	4	5	1292889600
86	1	1	5	1333670400
87	1	1	5	1320883200
88	1	1	5	1311638400
89	0	0	5	1347408000
90	0	0	5	1335398400
91	0	0	5	1334966400
92	0	0	5	1333929600
93	0	0	5	1330041600
94	0	0	5	1329609600
95	0	0	5	1320105600
96	0	0	5	1303776000
97	0	0	5	1297296000
98	0	0	5	1295308800
99	0	1	1	1331164800

Summary \

0 Good Quality Dog Food
 1 Not as Advertised
 2 "Delight" says it all
 3 Cough Medicine
 4 Great taffy
 5 Nice Taffy
 6 Great! Just as good as the expensive brands!
 7 Wonderful, tasty taffy
 8 Yay Barley
 9 Healthy Dog Food
 10 The Best Hot Sauce in the World
 11 My cats LOVE this "diet" food better than thei...
 12 My Cats Are Not Fans of the New Food
 13 fresh and greasy!
 14 Strawberry Twizzlers - Yummy
 15 Lots of twizzlers, just what you expect.
 16 poor taste
 17 Love it!
 18 GREAT SWEET CANDY!

19 Home delivered twizlers
20 Always fresh
21 TWIZZLERS
22 Delicious product!
23 Twizzlers
24 Please sell these in Mexico!!
25 Twizzlers - Strawberry
26 Nasty No flavor
27 Great Bargain for the Price
28 YUMMY!
29 The Best Hot Sauce in the World
30 Great machine!
31 THIS IS MY TASTE...
32 Best of the Instant Oatmeals
33 Good Instant
34 Great Irish oatmeal for those in a hurry!
35 satisfying
36 Love Gluten Free Oatmeal!!!
37 it's oatmeal
38 GOOD WAY TO START THE DAY....
39 Wife's favorite Breakfast
40 Why wouldn't you buy oatmeal from Mcanns? Tast...
41 Oatmeal For Oatmeal Lovers
42 Food-Great
43 Good Hot Breakfast
44 Great taste and convenience
45 Hearty Oatmeal
46 good
47 Mushy
48 Very good but next time I won't order the Vari...
49 Same stuff
50 Don't like it
51 HOT! And good! Came back for more :)
52 You'll go nuts over Ass-Kickin' Peanuts.
53 not ass kickin
54 Roasts up a smooth brew
55 Our guests love it!
56 Awesome Deal!
57 How can you go wrong!
58 Awsome - Kids in neighborhood loved us!
59 great deal.
60 Better price for this at Target
61 pretty expensive
62 stale product.
63 Hammer Nutrition 's Fizz Rocks!
64 great source of electrolytes
65 Great for preventing cramps
66 Low Carb Alternative to Gatorade
67 Taste is not so good.
68 How much would you pay for a bag of chocolate ...
69 pretzel haven!
70 Great Gummi!
71 Bigger then other brands
72 Best ever lattice tart
73 Warning! WARNING! -ALCOHOL SUGARS!
74 nothing special

75	No Tea Flavor
76	Good
77	Taste great
78	Order only in cold weather
79	this is the best
80	Delicious!
81	Great
82	Forget Molecular Gastronomy - this stuff rocke...
83	Natural Balance Lamb and Rice
84	INCREASED MY DOGS ITCHING
85	Great food!
86	Great for my dogs allergies
87	Great for stomach problems!
88	Better life for you dog!
89	Great Food
90	Great food for my my dog who has a sensitive s...
91	Great dog food
92	Mmmmm Mmmmmm good.
93	Great Dog Food!
94	So convenient
95	Good healthy dog food
96	Great dog food
97	Great allergy sensitive dog food, dogs love it
98	Perfect for our English Bulldog with Allergies
99	Bad

Text

0 I have bought several of the Vitality canned d...

1 Product arrived labeled as Jumbo Salted Peanut...

2 This is a confection that has been around a fe...

3 If you are looking for the secret ingredient i...

4 Great taffy at a great price. There was a wid...

5 I got a wild hair for taffy and ordered this f...

6 This saltwater taffy had great flavors and was...

7 This taffy is so good. It is very soft and ch...

8 Right now I'm mostly just sprouting this so my...

9 This is a very healthy dog food. Good for thei...

10 I don't know if it's the cactus or the tequila...

11 One of my boys needed to lose some weight and ...

12 My cats have been happily eating Felidae Plati...

13 good flavor! these came securely packed... the...

14 The Strawberry Twizzlers are my guilty pleasur...

15 My daughter loves twizzlers and this shipment ...

16 I love eating them and they are good for watch...

17 I am very satisfied with my Twizzler purchase....

18 Twizzlers, Strawberry my childhood favorite ca...

19 Candy was delivered very fast and was purchase...

20 My husband is a Twizzlers addict. We've bough...

21 I bought these for my husband who is currently...

22 I can remember buying this candy as a kid and ...

23 I love this candy. After weight watchers I ha...

24 I have lived out of the US for over 7 yrs now,...

25 Product received is as advertised.

...

26 The candy is just red , No flavor . Just plan...

27 I was so glad Amazon carried these batteries. ...

28 I got this for my Mum who is not diabetic but ...

29 I don't know if it's the cactus or the tequila...
30 I have never been a huge coffee fan. However, ...
31 This offer is a great price and a great taste,...
32 McCann's Instant Oatmeal is great if you must ...
33 This is a good instant oatmeal from the best o...
34 Instant oatmeal can become soggy the minute th...
35 McCann's Instant Irish Oatmeal, Variety Pack o...
36 For those of us with celiac disease this produ...
37 What else do you need to know? Oatmeal, instan...
38 I WAS VISITING MY FRIEND NATE THE OTHER MORNIN...
39 I ordered this for my wife as it was reccomend...
40 The variety packs taste great!

I ha...
41 McCann's makes oatmeal for every oatmeal conno...
42 I have McCann's Oatmeal every morning and by o...
43 McCann's Oatmeal is a good quality choice. Ou...
44 We really like the McCann's steel cut oats but...
45 This seems a little more wholesome than some o...
46 Good oatmeal. I like the apple cinnamon the b...
47 The flavors are good. However, I do not see a...
48 I really like the Maple and Brown Sugar flavor...
49 This is the same stuff you can buy at the big ...
50 This oatmeal is not good. Its mushy, soft, I d...
51 Got a free package of these with a bottle of b...
52 This wasn't in stock the last time I looked. I...
53 we're used to spicy foods down here in south t...
54 I roast at home with a stove-top popcorn poppe...
55 We roast these in a large cast iron pan on the...
56 Deal was awesome! Arrived before Halloween as...
57 It is chocolate, what can I say. Great variet...
58 Great product, nice combination of chocolates ...
59 Halloween is over but, I sent a bag to my daug...
60 Watch your prices with this. While the assort...
61 This bag of candy online is pretty expensive, ...
62 Arrived in 6 days and were so stale i could no...
63 I have used the endurolyte product for several...
64 This product serves me well as a source of ele...
65 This stuff really works for preventing crampin...
66 For those of us on a low carb diet these littl...
67 I purchased the Mango flavor, and to me it doe...
68 If you're impulsive like me, then \$6 is ok. Do...
69 this was sooooo deliscious but too bad i ate e...
70 These Albanese gummi bears and rings and so on...
71 Grape gummy bears are hard to find in my area....
72 I ordered two of these and two of raspberry la...
73 Buyer Beware Please! This sweetener is not for...
74 It is okay. I would not go out of my way to b...
75 No tea flavor at all. Just whole brunch of art...
76 These looked like a perfect snack to through i...
77 These taste really good. I have been purchasin...
78 The taste was great, but the berries had melte...
79 i know i cannot make tea this good. granted, ...
80 This peppermint stick is delicious and fun to ...
81 Great gift for all ages! I purchased these gia...
82 I know the product title says Molecular Gastro...
83 While my dogs like all of the flavors that we ...
84 Awesome dog food. However, when given to my "B...

85 We have three dogs and all of them love this f...
86 My dog has a ton of allergies both environment...
87 My shepherd/collie mix has IBS. Our vet recom...
88 Natural Balance Dry Dog Food Lamb Meal and Bro...
89 Great food! I love the idea of one food for al...
90 I have a standard poodle and pomeranian who bo...
91 This is great dog food, my dog has severs alle...
92 This food is great - all ages dogs. I have a ...
93 My golden retriever is one of the most picky d...
94 This is the same food we get at pet store. But...
95 I've been very pleased with the Natural Balanc...
96 My 1-1/2 year old basenji/jack russell mix lov...
97 Our pup has experienced allergies in forms of ...
98 My English Bulldog had skin allergies the summ...
99 I fed this to my Golden Retriever and he hated...

I have bought several of the Vitality canned dog food products and have found them a 11 to be of good quality. The product looks more like a stew than a processed meat a nd it smells better. My Labrador is finicky and she appreciates this product better than most.

Product arrived labeled as Jumbo Salted Peanuts...the peanuts were actually small si zed unsalted. Not sure if this was an error or if the vendor intended to represent t he product as "Jumbo".

This is a confection that has been around a few centuries. It is a light, pillowc citrus gelatin with nuts - in this case Filberts. And it is cut into tiny squares and then liberally coated with powdered sugar. And it is a tiny mouthful of heaven. No t too chewy, and very flavorful. I highly recommend this yummy treat. If you are f amiliar with the story of C.S. Lewis' "The Lion, The Witch, and The Wardrobe" - this is the treat that seduces Edmund into selling out his Brother and Sisters to the Wit ch.

If you are looking for the secret ingredient in Robitussin I believe I have found i t. I got this in addition to the Root Beer Extract I ordered (which was good) and m ade some cherry soda. The flavor is very medicinal.

Great taffy at a great price. There was a wide assortment of yummy taffy. Delivery was very quick. If your a taffy lover, this is a deal.

I got a wild hair for taffy and ordered this five pound bag. The taffy was all very enjoyable with many flavors: watermelon, root beer, melon, peppermint, grape, etc. M y only complaint is there was a bit too much red/black licorice-flavored pieces (jus t not my particular favorites). Between me, my kids, and my husband, this lasted onl y two weeks! I would recommend this brand of taffy -- it was a delightful treat.

This saltwater taffy had great flavors and was very soft and chewy. Each candy was individually wrapped well. None of the candies were stuck together, which did happe n in the expensive version, Fralinger's. Would highly recommend this candy! I serv ed it at a beach-themed party and everyone loved it!

This taffy is so good. It is very soft and chewy. The flavors are amazing. I woul d definitely recommend you buying it. Very satisfying!!

Right now I'm mostly just sprouting this so my cats can eat the grass. They love it. I rotate it around with Wheatgrass and Rye too

This is a very healthy dog food. Good for their digestion. Also good for small puppi es. My dog eats her required amount at every feeding.

I don't know if it's the cactus or the tequila or just the unique combination of ing redients, but the flavour of this hot sauce makes it one of a kind! We picked up a bottle once on a trip we were on and brought it back home with us and were totally b lown away! When we realized that we simply couldn't find it anywhere in our city we were bummed.

Now, because of the magic of the internet, we have a case of the sauce and are ecstatic because of it.

If you love hot sauce..I mean r eally love hot sauce, but don't want a sauce that tastelessly burns your throat, gra

b a bottle of Tequila Picante Gourmet de Inclan. Just realize that once you taste it, you will never want to use any other sauce.

Thank you for the personal, incredible service!

One of my boys needed to lose some weight and the other didn't. I put this food on the floor for the chubby guy, and the protein-rich, no by-product food up higher where only my skinny boy can jump. The higher food sits going stale. They both really go for this food. And my chubby boy has been losing about an ounce a week.

My cats have been happily eating Felidae Platinum for more than two years. I just got a new bag and the shape of the food is different. They tried the new food when I first put it in their bowls and now the bowls sit full and the kitties will not touch the food. I've noticed similar reviews related to formula changes in the past. Unfortunately, I now need to find a new food that my cats will eat.

good flavor! these came securely packed... they were fresh and delicious! i love these Twizzlers!

The Strawberry Twizzlers are my guilty pleasure - yummy. Six pounds will be around for a while with my son and I.

My daughter loves twizzlers and this shipment of six pounds really hit the spot. It's exactly what you would expect...six packages of strawberry twizzlers.

I love eating them and they are good for watching TV and looking at movies! It is not too sweet. I like to transfer them to a zip lock baggie so they stay fresh so I can take my time eating them.

I am very satisfied with my Twizzler purchase. I shared these with others and we have all enjoyed them. I will definitely be ordering more.

Twizzlers, Strawberry my childhood favorite candy, made in Lancaster Pennsylvania by Y & S Candies, Inc. one of the oldest confectionery Firms in the United States, now a Subsidiary of the Hershey Company, the Company was established in 1845 as Young and Smylie, they also make Apple Licorice Twists, Green Color and Blue Raspberry Licorice Twists, I like them all

I keep it in a dry cool place because is not recommended it to put it in the fridge. According to the Guinness Book of Records, the longest Licorice Twist ever made measured 1.200 Feet (370 M) and weighted 100 Pounds (45 Kg) and was made by Y & S Candies, Inc. This Record-Breaking Twist became a Guinness World Record on July 19, 1998. This Product is Kosher! Thank You

Candy was delivered very fast and was purchased at a reasonable price. I was home bound and unable to get to a store so this was perfect for me.

My husband is a Twizzlers addict. We've bought these many times from Amazon because we're government employees living overseas and can't get them in the country we are assigned to. They've always been fresh and tasty, packed well and arrive in a timely manner.

I bought these for my husband who is currently overseas. He loves these, and apparently his staff likes them also.
There are generous amounts of Twizzlers in each 16-ounce bag, and this was well worth the price. Twizzlers, Strawberry, 16-Ounce Bags (Pack of 6)

I can remember buying this candy as a kid and the quality hasn't dropped in all these years. Still a superb product you won't be disappointed with.

I love this candy. After weight watchers I had to cut back but still have a craving for it.

I have lived out of the US for over 7 yrs now, and I so miss my Twizzlers!! When I go back to visit or someone visits me, I always stock up. All I can say is YUM!
Sell these in Mexico and you will have a faithful buyer, more often than I'm able to buy them right now.

Product received is as advertised.

Twizzlers, Strawberry, 16-Ounce Bags (Pack of 6)

The candy is just red , No flavor . Just plain and chewy . I would never buy them again

I was so glad Amazon carried these batteries. I have a hard time finding them elsewhere because they are such a unique size. I need them for my garage door opener.

/>Great deal for the price.

I got this for my Mum who is not diabetic but needs to watch her sugar intake, and my father who simply chooses to limit unnecessary sugar intake - she's the one with the sweet tooth - they both LOVED these toffees, you would never guess that they're sugar-free and it's so great that you can eat them pretty much guilt free! I was so impressed that I've ordered some for myself (w dark chocolate) to take to the office so I'll eat them instead of snacking on sugary sweets.
These are just EXCELLENT!

I don't know if it's the cactus or the tequila or just the unique combination of ingredients, but the flavour of this hot sauce makes it one of a kind! We picked up a bottle once on a trip we were on and brought it back home with us and were totally blown away! When we realized that we simply couldn't find it anywhere in our city we were bummed.

Now, because of the magic of the internet, we have a case of the sauce and are ecstatic because of it.

If you love hot sauce..I mean really love hot sauce, but don't want a sauce that tastelessly burns your throat, grab a bottle of Tequila Picante Gourmet de Inclan. Just realize that once you taste it, you will never want to use any other sauce.

Thank you for the personal, incredible service!

I have never been a huge coffee fan. However, my mother purchased this little machine and talked me into trying the Latte Macchiato. No Coffee Shop has a better one and I like most of the other products, too (as a usually non-coffee drinker!).
The little Dolce Gusto Machine is super easy to use and prepares a really good Coffee/Latte/Cappuccino/etc in less than a minute (if water is heated up). I would recommend the Dolce Gusto to anyone. Too good for the price and I am getting one myself! :) This offer is a great price and a great taste, thanks Amazon for selling this product.

Staral

McCann's Instant Oatmeal is great if you must have your oatmeal but can only scrape together two or three minutes to prepare it. There is no escaping the fact, however, that even the best instant oatmeal is nowhere near as good as even a store brand of oatmeal requiring stovetop preparation. Still, the McCann's is as good as it gets for instant oatmeal. It's even better than the organic, all-natural brands I have tried. All the varieties in the McCann's variety pack taste good. It can be prepared in the microwave or by adding boiling water so it is convenient in the extreme when time is an issue.

McCann's use of actual cane sugar instead of high fructose corn syrup helped me decide to buy this product. Real sugar tastes better and is not as harmful as the other stuff. One thing I do not like, though, is McCann's use of thickeners. Oats plus water plus heat should make a creamy, tasty oatmeal without the need for guar gum. But this is a convenience product. Maybe the guar gum is why, after sitting in the bowl a while, the instant McCann's becomes too thick and gluey.

This is a good instant oatmeal from the best oatmeal brand. It uses cane sugar instead of high fructose corn syrup, so not only does it have a better sweetness, but some doctors now say that this form of sugar is better for you. Great on a cold morning when you don't have time to make McCann's Steel Cut Oats. The apple cinnamon is the best but the maple and brown sugar or the regular are good too. Plus they don't require doctoring to actually tell the three flavors apart.

Instant oatmeal can become soggy the minute the water hits the bowl. McCann's Instant Oatmeal holds its texture, has excellent flavor, and is good for you all at the same time. McCann's regular oat meal is excellent, too, but may take a bit longer to prepare than most have time for in the morning. This is the best instant brand I've ever eaten, and a very close second to the non-instant variety.

McCann's Instant Irish Oatmeal, Variety Pack of Regular, Apples & Cinnamon, and Maple & Brown Sugar, 10-Count Boxes (Pack of 6)

McCann's Instant Irish Oatmeal, Variety Pack of Regular, Apples & Cinnamon, and Maple & Brown Sugar, 10-Count Boxes (Pack of 6)

I'm a fan of the McCann's steel-cut oats, so I thought I'd give the instant variety a try. I found it to be a har

dy meal, not too sweet, and great for folks like me (post-bariatric surgery) who need food that is palatable, easily digestible, with fiber but won't make you bloat. For those of us with celiac disease this product is a lifesaver and what could be better than getting it at almost half the price of the grocery or health food store! I love McCann's instant oatmeal - all flavors!!!
Thanks,
Abby
What else do you need to know? Oatmeal, instant (make it with a half cup of low-fat milk and add raisins; nuke for 90 seconds). More expensive than Kroger store brand oatmeal and maybe a little tastier or better texture or something. It's still just oatmeal. Mmm, convenient!

I WAS VISITING MY FRIEND NATE THE OTHER MORNING FOR COFFEE , HE CAME OUT OF HIS STORAGE ROOM WITH (A PACKET OF McCANN'S INSTANT IRISH OATMEAL .) HE SUGGESTED THAT I TRY IT FOR MY OWN USE , IN MY STASH . SOMETIMES NATE DOSE NOT GIVE YOU A CHANCE TO SAY NO , SO I ENDED UP TRYING THE APPLE AND CINN . FOUND IT TO BE VERY TASTEFULL WHEN MADE WITH WATER OR POWDERED MILK . IT GOES GOOD WITH O.J. AND COFFEE AND A SLICE OF TOAST AND YOUR READY TO TAKE ON THE WORLD...OR THE DAY AT LEAST.. JERRY REITH...

I ordered this for my wife as it was recommended by our daughter. She has this almost every morning and likes all flavors. She's happy, I'm happy!!!
[McCANN'S Instant Irish Oatmeal, Variety Pack of Regular, Apples & Cinnamon, and Maple & Brown Sugar, 10-Count Boxes \(Pack of 6\)](http://www.amazon.com/gp/product/B001E05QW8)

The variety packs taste great!
I have them every morning. At \$0.30 cents per meal, I don't understand why everyone on earth isn't buying this stuff up.

Maple and brown sugar is terrific, followed by apples and cinnamon, followed by regular. You don't get tired of the same ole thing, and they taste great.
I just boil water from a small pot, empty the packet or 2 in a bowl, pour in boiling water, and watch it expand to 2x its size!
Taste really good and takes minutes to prepare.
Not sure why everyone on earth isn't this. Convenient, healthy, very quick, excellent quality, and extremely cheap...

McCann's makes oatmeal for every oatmeal connoisseur, whether one likes it from the raw pellet state that cooks for half an hour, to the sloth addled instant, which can be done in the microwave for under three minutes. It's all good, that's for sure, and the beauty of the instant variety is that it is available in different flavors as well as regular.
This variety pack allows different tastes to be explored, as well as giving you a chance to experience the difference between McCann's and other well-known oatmeals. What I personally like about McCann's is that it cooks up thicker and with more body than the top brand here in America. The Apples & Cinnamon, though, tends to be a little liquidy so you may want to experiment with the amount of water you add. In my 1300watt microwave the oatmeal cooks up in about one minute and twenty-seven seconds, so you should also watch that to get a handle on how much time and water to use.
The only bad thing -- if you can consider it a bad thing -- about this offering is that you have to buy in lot so you'll end up with six ten-count boxes. This is good if you have a whole family of oatmeal-eaters, but if you're a single person alone -- well, love oatmeal.

I have McCann's Oatmeal every morning and by ordering it from Amazon I am able to save almost \$3.00 per box.
It is a great product. Tastes great and very healthy
McCann's Oatmeal is a good quality choice. Our favorite is the Apples and Cinnamon, but we find that none of these are overly sugary. For a good hot breakfast in 2 minutes, this is excellent.

We really like the McCann's steel cut oats but find we don't cook it up too often.
This tastes much better to me than the grocery store brands and is just as convenient.
Anything that keeps me eating oatmeal regularly is a good thing.

This seems a little more wholesome than some of the supermarket brands, but it is somewhat mushy and doesn't have quite as much flavor either. It didn't pass muster with my kids, so I probably won't buy it again.

Good oatmeal. I like the apple cinnamon the best. Though I wouldn't follow the directions on the package since it always comes out too soupy for my taste. That could

just be me since I like my oatmeal really thick to add some milk on top of. The flavors are good. However, I do not see any difference between this and Oaker Oats brand - they are both mushy. I really like the Maple and Brown Sugar flavor. The regular is fine with brown sugar added. The Apples and Cinnamon flavor is OK. This is a very quick, easy and satisfying breakfast and I'll order this brand again, but not the variety. I'll get all Maple and Brown Sugar. This is the same stuff you can buy at the big box stores. There is nothing healthy about it. It is just carbs and sugars. Save your money and get something that at least has some taste.

In [6]:

In [7]:

```
# Tokenizers
bert_tokenizer = BertTokenizer.from_pretrained('bert-base-uncased')
t5_tokenizer = T5Tokenizer.from_pretrained('t5-small')
```

You are using the default legacy behaviour of the <class 'transformers.models.t5.tokenization_t5.T5Tokenizer'>. This is expected, and simply means that the `legacy` (previous) behavior will be used so nothing changes for you. If you want to use the new behaviour, set `legacy=False`. This should only be set if you understand what it means, and thoroughly read the reason why this was added as explained in <https://github.com/huggingface/transformers/pull/24565>

Special tokens have been added in the vocabulary, make sure the associated word embeddings are fine-tuned or trained.

In [45]:

```
# Model Initialization
from transformers import BertModel

# Model Initialization
bert_model = BertModel.from_pretrained('bert-base-uncased')
t5_model = T5ForConditionalGeneration.from_pretrained('t5-small')
```

In [46]:

```
# Splitting data into train and test sets
train_df, test_df = train_test_split(df, test_size=0.2, random_state=42)
```

In [47]:

```
class CustomDataset(Dataset):
    def __init__(self, dataframe, bert_tokenizer, t5_tokenizer):
        self.data = dataframe
        self.bert_tokenizer = bert_tokenizer
        self.t5_tokenizer = t5_tokenizer

    def __len__(self):
        return len(self.data)

    def __getitem__(self, idx):
        review = self.data.iloc[idx]['Text']
        summary = self.data.iloc[idx]['Summary']

        # Tokenize inputs for BERT
        bert_inputs = self.bert_tokenizer.encode_plus(
            review,
            add_special_tokens=True,
            max_length=512, # Set max length to the desired maximum sequence length
            padding='max_length',
```

```
        truncation=True,
        return_tensors='pt'
    )

    # Tokenize inputs for T5
    t5_inputs = self.t5_tokenizer(
        "summarize: " + review,
        return_tensors="pt",
        max_length=512, # Set max length to the desired maximum sequence length
        padding='max_length',
        truncation=True
)

return {
    'bert_input_ids': bert_inputs['input_ids'].flatten(),
    'bert_attention_mask': bert_inputs['attention_mask'].flatten(),
    't5_input_ids': t5_inputs['input_ids'].flatten(),
    't5_attention_mask': t5_inputs['attention_mask'].flatten(),
    'summary': summary
}
```

In [48]: `# Create datasets`
train_dataset = CustomDataset(train_df, bert_tokenizer, t5_tokenizer)
test_dataset = CustomDataset(test_df, bert_tokenizer, t5_tokenizer)

In [49]: `# Define DataLoader`
train_loader = DataLoader(train_dataset, batch_size=8, shuffle=True)
test_loader = DataLoader(test_dataset, batch_size=8, shuffle=False)

In [50]: `print("device = "+"cuda" if torch.cuda.is_available() else "cpu")`
device = torch.device("cuda" if torch.cuda.is_available() else "cpu")

device = cuda

In [81]: `bert_model.to(device)`
`t5_model.to(device)`

```
Out[81]: T5ForConditionalGeneration(  
    (shared): Embedding(32128, 512)  
    (encoder): T5Stack(  
        (embed_tokens): Embedding(32128, 512)  
        (block): ModuleList(  
            (0): T5Block(  
                (layer): ModuleList(  
                    (0): T5LayerSelfAttention(  
                        (SelfAttention): T5Attention(  
                            (q): Linear(in_features=512, out_features=512, bias=False)  
                            (k): Linear(in_features=512, out_features=512, bias=False)  
                            (v): Linear(in_features=512, out_features=512, bias=False)  
                            (o): Linear(in_features=512, out_features=512, bias=False)  
                            (relative_attention_bias): Embedding(32, 8)  
                        )  
                    (layer_norm): T5LayerNorm()  
                    (dropout): Dropout(p=0.1, inplace=False)  
                )  
            (1): T5LayerFF(  
                (DenseReluDense): T5DenseActDense(  
                    (wi): Linear(in_features=512, out_features=2048, bias=False)  
                    (wo): Linear(in_features=2048, out_features=512, bias=False)  
                    (dropout): Dropout(p=0.1, inplace=False)  
                    (act): ReLU()  
                )  
                (layer_norm): T5LayerNorm()  
                (dropout): Dropout(p=0.1, inplace=False)  
            )  
        )  
    (1-5): 5 x T5Block(  
        (layer): ModuleList(  
            (0): T5LayerSelfAttention(  
                (SelfAttention): T5Attention(  
                    (q): Linear(in_features=512, out_features=512, bias=False)  
                    (k): Linear(in_features=512, out_features=512, bias=False)  
                    (v): Linear(in_features=512, out_features=512, bias=False)  
                    (o): Linear(in_features=512, out_features=512, bias=False)  
                )  
            (layer_norm): T5LayerNorm()  
            (dropout): Dropout(p=0.1, inplace=False)  
        )  
    (1): T5LayerFF(  
        (DenseReluDense): T5DenseActDense(  
            (wi): Linear(in_features=512, out_features=2048, bias=False)  
            (wo): Linear(in_features=2048, out_features=512, bias=False)  
            (dropout): Dropout(p=0.1, inplace=False)  
            (act): ReLU()  
        )  
        (layer_norm): T5LayerNorm()  
        (dropout): Dropout(p=0.1, inplace=False)  
    )  
)
```

```
(dropout): Dropout(p=0.1, inplace=False)
)
(decoder): T5Stack(
    (embed_tokens): Embedding(32128, 512)
    (block): ModuleList(
        (0): T5Block(
            (layer): ModuleList(
                (0): T5LayerSelfAttention(
                    (SelfAttention): T5Attention(
                        (q): Linear(in_features=512, out_features=512, bias=False)
                        (k): Linear(in_features=512, out_features=512, bias=False)
                        (v): Linear(in_features=512, out_features=512, bias=False)
                        (o): Linear(in_features=512, out_features=512, bias=False)
                        (relative_attention_bias): Embedding(32, 8)
                    )
                    (layer_norm): T5LayerNorm()
                    (dropout): Dropout(p=0.1, inplace=False)
                )
                (1): T5LayerCrossAttention(
                    (EncDecAttention): T5Attention(
                        (q): Linear(in_features=512, out_features=512, bias=False)
                        (k): Linear(in_features=512, out_features=512, bias=False)
                        (v): Linear(in_features=512, out_features=512, bias=False)
                        (o): Linear(in_features=512, out_features=512, bias=False)
                    )
                    (layer_norm): T5LayerNorm()
                    (dropout): Dropout(p=0.1, inplace=False)
                )
                (2): T5LayerFF(
                    (DenseReluDense): T5DenseActDense(
                        (wi): Linear(in_features=512, out_features=2048, bias=False)
                        (wo): Linear(in_features=2048, out_features=512, bias=False)
                        (dropout): Dropout(p=0.1, inplace=False)
                        (act): ReLU()
                    )
                    (layer_norm): T5LayerNorm()
                    (dropout): Dropout(p=0.1, inplace=False)
                )
            )
        )
    )
    (1-5): 5 x T5Block(
        (layer): ModuleList(
            (0): T5LayerSelfAttention(
                (SelfAttention): T5Attention(
                    (q): Linear(in_features=512, out_features=512, bias=False)
                    (k): Linear(in_features=512, out_features=512, bias=False)
                    (v): Linear(in_features=512, out_features=512, bias=False)
                    (o): Linear(in_features=512, out_features=512, bias=False)
                )
                (layer_norm): T5LayerNorm()
                (dropout): Dropout(p=0.1, inplace=False)
            )
            (1): T5LayerCrossAttention(
                (EncDecAttention): T5Attention(
                    (q): Linear(in_features=512, out_features=512, bias=False)
                    (k): Linear(in_features=512, out_features=512, bias=False)
                )
            )
        )
    )
)
```

```
(v): Linear(in_features=512, out_features=512, bias=False)
      (o): Linear(in_features=512, out_features=512, bias=False)
    )
  (layer_norm): T5LayerNorm()
  (dropout): Dropout(p=0.1, inplace=False)
)
(2): T5LayerFF(
  (DenseReluDense): T5DenseActDense(
    (wi): Linear(in_features=512, out_features=2048, bias=False)
    (wo): Linear(in_features=2048, out_features=512, bias=False)
    (dropout): Dropout(p=0.1, inplace=False)
    (act): ReLU()
  )
  (layer_norm): T5LayerNorm()
  (dropout): Dropout(p=0.1, inplace=False)
)
)
)
)
)
(final_layer_norm): T5LayerNorm()
(dropout): Dropout(p=0.1, inplace=False)
)
(lm_head): Linear(in_features=512, out_features=32128, bias=False)
)
```

```
In [79]: bert_model.to(device)
t5_model.to(device)
```

```
Out[79]: T5ForConditionalGeneration(  
    (shared): Embedding(32128, 512)  
    (encoder): T5Stack(  
        (embed_tokens): Embedding(32128, 512)  
        (block): ModuleList(  
            (0): T5Block(  
                (layer): ModuleList(  
                    (0): T5LayerSelfAttention(  
                        (SelfAttention): T5Attention(  
                            (q): Linear(in_features=512, out_features=512, bias=False)  
                            (k): Linear(in_features=512, out_features=512, bias=False)  
                            (v): Linear(in_features=512, out_features=512, bias=False)  
                            (o): Linear(in_features=512, out_features=512, bias=False)  
                            (relative_attention_bias): Embedding(32, 8)  
                        )  
                        (layer_norm): T5LayerNorm()  
                        (dropout): Dropout(p=0.1, inplace=False)  
                    )  
                    (1): T5LayerFF(  
                        (DenseReluDense): T5DenseActDense(  
                            (wi): Linear(in_features=512, out_features=2048, bias=False)  
                            (wo): Linear(in_features=2048, out_features=512, bias=False)  
                            (dropout): Dropout(p=0.1, inplace=False)  
                            (act): ReLU()  
                        )  
                        (layer_norm): T5LayerNorm()  
                        (dropout): Dropout(p=0.1, inplace=False)  
                    )  
                )  
            )  
            (1-5): 5 x T5Block(  
                (layer): ModuleList(  
                    (0): T5LayerSelfAttention(  
                        (SelfAttention): T5Attention(  
                            (q): Linear(in_features=512, out_features=512, bias=False)  
                            (k): Linear(in_features=512, out_features=512, bias=False)  
                            (v): Linear(in_features=512, out_features=512, bias=False)  
                            (o): Linear(in_features=512, out_features=512, bias=False)  
                        )  
                        (layer_norm): T5LayerNorm()  
                        (dropout): Dropout(p=0.1, inplace=False)  
                    )  
                    (1): T5LayerFF(  
                        (DenseReluDense): T5DenseActDense(  
                            (wi): Linear(in_features=512, out_features=2048, bias=False)  
                            (wo): Linear(in_features=2048, out_features=512, bias=False)  
                            (dropout): Dropout(p=0.1, inplace=False)  
                            (act): ReLU()  
                        )  
                        (layer_norm): T5LayerNorm()  
                        (dropout): Dropout(p=0.1, inplace=False)  
                    )  
                )  
            )  
        )  
        (final_layer_norm): T5LayerNorm()
```

```

        (dropout): Dropout(p=0.1, inplace=False)
    )
    (decoder): T5Stack(
        (embed_tokens): Embedding(32128, 512)
        (block): ModuleList(
            (0): T5Block(
                (layer): ModuleList(
                    (0): T5LayerSelfAttention(
                        (SelfAttention): T5Attention(
                            (q): Linear(in_features=512, out_features=512, bias=False)
                            (k): Linear(in_features=512, out_features=512, bias=False)
                            (v): Linear(in_features=512, out_features=512, bias=False)
                            (o): Linear(in_features=512, out_features=512, bias=False)
                            (relative_attention_bias): Embedding(32, 8)
                        )
                        (layer_norm): T5LayerNorm()
                        (dropout): Dropout(p=0.1, inplace=False)
                    )
                )
            (1): T5LayerCrossAttention(
                (EncDecAttention): T5Attention(
                    (q): Linear(in_features=512, out_features=512, bias=False)
                    (k): Linear(in_features=512, out_features=512, bias=False)
                    (v): Linear(in_features=512, out_features=512, bias=False)
                    (o): Linear(in_features=512, out_features=512, bias=False)
                )
                (layer_norm): T5LayerNorm()
                (dropout): Dropout(p=0.1, inplace=False)
            )
        (2): T5LayerFF(
            (DenseReluDense): T5DenseActDense(
                (wi): Linear(in_features=512, out_features=2048, bias=False)
                (wo): Linear(in_features=2048, out_features=512, bias=False)
                (dropout): Dropout(p=0.1, inplace=False)
                (act): ReLU()
            )
            (layer_norm): T5LayerNorm()
            (dropout): Dropout(p=0.1, inplace=False)
        )
    )
)
(1-5): 5 x T5Block(
    (layer): ModuleList(
        (0): T5LayerSelfAttention(
            (SelfAttention): T5Attention(
                (q): Linear(in_features=512, out_features=512, bias=False)
                (k): Linear(in_features=512, out_features=512, bias=False)
                (v): Linear(in_features=512, out_features=512, bias=False)
                (o): Linear(in_features=512, out_features=512, bias=False)
            )
            (layer_norm): T5LayerNorm()
            (dropout): Dropout(p=0.1, inplace=False)
        )
    )
    (1): T5LayerCrossAttention(
        (EncDecAttention): T5Attention(
            (q): Linear(in_features=512, out_features=512, bias=False)
            (k): Linear(in_features=512, out_features=512, bias=False)
        )
    )
)

```

```

        (v): Linear(in_features=512, out_features=512, bias=False)
        (o): Linear(in_features=512, out_features=512, bias=False)
    )
    (layer_norm): T5LayerNorm()
    (dropout): Dropout(p=0.1, inplace=False)
)
(2): T5LayerFF(
    (DenseReluDense): T5DenseActDense(
        (wi): Linear(in_features=512, out_features=2048, bias=False)
        (wo): Linear(in_features=2048, out_features=512, bias=False)
        (dropout): Dropout(p=0.1, inplace=False)
        (act): ReLU()
    )
    (layer_norm): T5LayerNorm()
    (dropout): Dropout(p=0.1, inplace=False)
)
)
)
)
(final_layer_norm): T5LayerNorm()
(dropout): Dropout(p=0.1, inplace=False)
)
(lm_head): Linear(in_features=512, out_features=32128, bias=False)
)

```

```
In [52]: optimizer = AdamW(list(bert_model.parameters()) + list(t5_model.parameters()), lr=2
num_epochs = 3
```

```
In [56]: for epoch in range(num_epochs):
    bert_model.train()
    t5_model.train()
    for batch_idx, batch in enumerate(tqdm(train_loader, desc="Epoch " + str(epoch+1)))
        optimizer.zero_grad()

        bert_input_ids = batch['bert_input_ids'].to(device)
        bert_attention_mask = batch['bert_attention_mask'].to(device)
        t5_input_ids = batch['t5_input_ids'].to(device)
        t5_attention_mask = batch['t5_attention_mask'].to(device)

        # Forward pass through BERT
        bert_outputs = bert_model(input_ids=bert_input_ids, attention_mask=bert_attention_mask)
        bert_last_hidden_state = bert_outputs.last_hidden_state

        # Forward pass through T5
        t5_outputs = t5_model(input_ids=t5_input_ids, attention_mask=t5_attention_mask)
        t5_loss = t5_outputs.loss

        # Jointly optimize BERT and T5
        loss = t5_loss
        loss.backward()
        optimizer.step()
```

Epoch 1: 100%		200/200 [17:59<00:00, 5.40s/it]
Epoch 2: 100%		200/200 [17:05<00:00, 5.13s/it]
Epoch 3: 100%		200/200 [17:00<00:00, 5.10s/it]

```
In [78]: # Model Testing
bert_model.eval()
t5_model.eval()

with torch.no_grad():
    for i, batch in enumerate(test_loader):
        if i == 30: # Stop after processing 10 batches
            break

        bert_input_ids = batch['bert_input_ids'].to(device)
        bert_attention_mask = batch['bert_attention_mask'].to(device)
        t5_input_ids = batch['t5_input_ids'].to(device)
        t5_attention_mask = batch['t5_attention_mask'].to(device)

        # Forward pass through BERT
        bert_outputs = bert_model(input_ids=bert_input_ids, attention_mask=bert_att
        bert_last_hidden_state = bert_outputs.last_hidden_state

        # Forward pass through T5
        t5_outputs = t5_model.generate(input_ids=t5_input_ids, attention_mask=t5_at

        # Decode the generated summaries
        generated_summaries = t5_tokenizer.batch_decode(t5_outputs, skip_special_to

        # Print the original review and generated summary
        # Print the original review and generated summary
        print("Review:", test_dataset[i]['summary'])
        print("Generated Summary:", generated_summaries[0]) # Assuming batch size
        print()
```

Review: I have bought several of the Vitality canned dog food products and have found them all to be of good quality. The product looks more like a stew than a processed meat and it smells better. My Labrador is finicky and she appreciates this product better than most.

Generated Summary: smells and looks good. best for finicky dogs.

Review: Product arrived labeled as Jumbo Salted Peanuts...the peanuts were actually small sized unsalted. Not sure if this was an error or if the vendor intended to represent the product as 'Jumbo'.

Generated Summary: Product does not match description.

Review: This is a confection that has been around a few centuries. It is a light, plowy citrus gelatin with nuts - in this case Filberts. And it is cut into tiny squares and then liberally coated with powdered sugar. And it is a tiny mouthful of heaven. Not too chewy, and very flavorful. I highly recommend this yummy treat. If you are familiar with the story of C.S. Lewis' 'The Lion, The Witch, and The Wardrobe' -- this is the treat that seduces Edmund into selling out his Brother and Sisters to the Witch.

Generated Summary: Delicious.

Review: If you are looking for the secret ingredient in Robitussin I believe I have found it. I got this in addition to the Root Beer Extract I ordered (which was good) and made some cherry soda. The flavor is very medicinal.

Generated Summary: Medicinal flavor, not for everyone.

Review: Great taffy at a great price. There was a wide assortment of yummy taffy. Delivery was very quick. If you're a taffy lover, this is a deal.

Generated Summary: Great variety, and excellent taste.

Review: I got a wild hair for taffy and ordered this five pound bag. The taffy was all very enjoyable with many flavors: watermelon, root beer, melon, peppermint, grape, etc. My only complaint is there was a bit too much red/black licorice-flavored pieces (just not my particular favorites). Between me, my kids, and my husband, this lasted only two weeks! I would recommend this brand of taffy -- it was a delightful treat.

Generated Summary: tasty taffy, some flavors were bad.

Review: This saltwater taffy had great flavors and was very soft and chewy. Each candy was individually wrapped well. None of the candies were stuck together, which did happen in the expensive version, Fralinger's. Would highly recommend this candy! I served it at a beach-themed party and everyone loved it!

Generated Summary: perfect for parties.

Review: This taffy is so good. It is very soft and chewy. The flavors are amazing. I would definitely recommend you buying it. Very satisfying!!

Generated Summary: taffy was Soft, chewy, and flavorful.

Review: Right now I'm mostly just sprouting this so my cats can eat the grass. They love it. I rotate it around with Wheatgrass and Rye too

Generated Summary: Healthy option for pets.

Review: This is a very healthy dog food. Good for their digestion. Also good for small puppies. My dog eats her required amount at every feeding.

Generated Summary: Unique and flavorful hot sauce.

Review: I don't know if it's the cactus or the tequila or just the unique combinatio

n of ingredients, but the flavor of this hot sauce makes it one of a kind! We picked up a bottle once on a trip we were on and brought it back home with us and were totally blown away! When we realized that we simply couldn't find it anywhere in our city we were bummed. Now, because of the magic of the internet, we have a case of the sauce and are ecstatic because of it. If you love hot sauce..I mean really love hot sauce, but don't want a sauce that tastelessly burns your throat, grab a bottle of Tequila Picante Gourmet de Inclan. Just realize that once you taste it, you will never want to use any other sauce. Thank you for the personal, incredible service!

Generated Summary: Recommended for weight management.

Review: One of my boys needed to lose some weight and the other didn't. I put this food on the floor for the chubby guy, and the protein-rich, no by-product food up higher where only my skinny boy can jump. The higher food sits going stale. They both really go for this food. And my chubby boy has been losing about an ounce a week.

Generated Summary: Not recommended.

Review: My cats have been happily eating Felidae Platinum for more than two years. I just got a new bag and the shape of the food is different. They tried the new food when I first put it in their bowls and now the bowls sit full and the kitties will not touch the food. I've noticed similar reviews related to formula changes in the past. Unfortunately, I now need to find a new food that my cats will eat.

Generated Summary: Fresh and delicious.

Review: good flavor! these came securely packed... they were fresh and delicious! i love these Twizzlers!

Generated Summary: Yummy and highly satisfying.

Review: The Strawberry Twizzlers are my guilty pleasure - yummy. Six pounds will be around for a while with my son and I.

Generated Summary: Great for snacking.

Review: My daughter loves Twizzlers and this shipment of six pounds really hit the spot. It's exactly what you would expect...six packages of strawberry Twizzlers.

Generated Summary: Satisfying purchase.

Review: I love eating them and they are good for watching TV and looking at movies! It is not too sweet. I like to transfer them to a zip lock baggie so they stay fresh so I can take my time eating them.

Generated Summary: Recommended only for candy lovers.

Review: I am very satisfied with my Twizzler purchase. I shared these with others and we have all enjoyed them. I will definitely be ordering more.

Generated Summary: Fresh and tasty.

Review: Twizzlers, Strawberry my childhood favorite candy, made in Lancaster Pennsylvania by Y & S Candies, Inc. one of the oldest confectionery Firms in the United States, now a Subsidiary of the Hershey Company, the Company was established in 1845 as Young and Smylie, they also make Apple Licorice Twists, Green Color and Blue Raspberry Licorice Twists, I like them all I keep it in a dry cool place because is not recommended it to put it in the fridge. According to the Guinness Book of Records, the longest Licorice Twist ever made measured 1.200 Feet (370 M) and weighted 100 Pounds (45 Kg) and was made by Y & S Candies, Inc. This Record-Breaking Twist became a Guinness World Record on July 19, 1998. This Product is Kosher! Thank You Candy was delivered very fast and was purchased at a reasonable price. I was home bound and unable to get to a store so this was perfect for me.

Generated Summary: Generous amounts, good value.

Review: My husband is a Twizzlers addict. We've bought these many times from Amazon because we're government employees living overseas and can't get them in the country we are assigned to. They've always been fresh and tasty, packed well and arrive in a timely manner.

Generated Summary: Consistent quality.

Review: I bought these for my husband who is currently overseas. He loves these, and apparently his staff likes them also. There are generous amounts of Twizzlers in each 16-ounce bag, and this was well worth the price. Twizzlers, Strawberry, 16-Ounce Bags (Pack of 6)

Generated Summary: Satisfying candy. Recommended for those with diabetes.

Review: I can remember buying this candy as a kid and the quality hasn't dropped in all these years. Still a superb product you won't be disappointed with.

Generated Summary: Recommended for oatmeal lovers.

Review: I love this candy. After weight watchers I had to cut back but still have a craving for it.

Generated Summary: Convenient and nutritious.

Review: I have lived out of the US for over 7 yrs now, and I so miss my Twizzlers!! When I go back to visit or someone visits me, I always stock up. All I can say is YUM! Sell these in Mexico and you will have a faithful buyer, more often than I'm able to buy them right now. Product received is as advertised. Twizzlers, Strawberry, 16-Ounce Bags (Pack of 6)

Generated Summary: Great texture and flavor.

Review: The candy is just red , No flavor . Just plain and chewy . I would never buy them again

Generated Summary: Convenient and tasty. Recommended for busy mornings.

Review: I was so glad Amazon carried these batteries. I have a hard time finding them elsewhere because they are such a unique size. I need them for my garage door opener. Great deal for the price.

Generated Summary: Delicious oatmeal. Highly recommended for oatmeal lovers.

Review: I got this for my Mum who is not diabetic but needs to watch her sugar intake, and my father who simply chooses to limit unnecessary sugar intake - she's the one with the sweet tooth - they both LOVED these toffees, you would never guess that they're sugar-free and it's so great that you can eat them pretty much guilt free! I was so impressed that I've ordered some for myself (w dark chocolate) to take to the office so I'll eat them instead of snacking on sugary sweets. These are just EXCELLENT!

Generated Summary: Tasty and convenient option.

Review: I don't know if it's the cactus or the tequila or just the unique combination of ingredients, but the flavour of this hot sauce makes it one of a kind! We picked up a bottle once on a trip we were on and brought it back home with us and were totally blown away! When we realized that we simply couldn't find it anywhere in our city we were bummed. Now, because of the magic of the internet, we have a case of the sauce and are ecstatic because of it. If you love hot sauce..I mean really love hot sauce, but don't want a sauce that tastelessly burns your throat, grab a bottle of Tequila Picante Gourmet de Inclan. Just realize that once you taste it, you will never want to use any other sauce. Thank you for the personal, incredible service!

Generated Summary: Great taste and value.

In []: