Closet.Ai

Your very smart clothing recommender

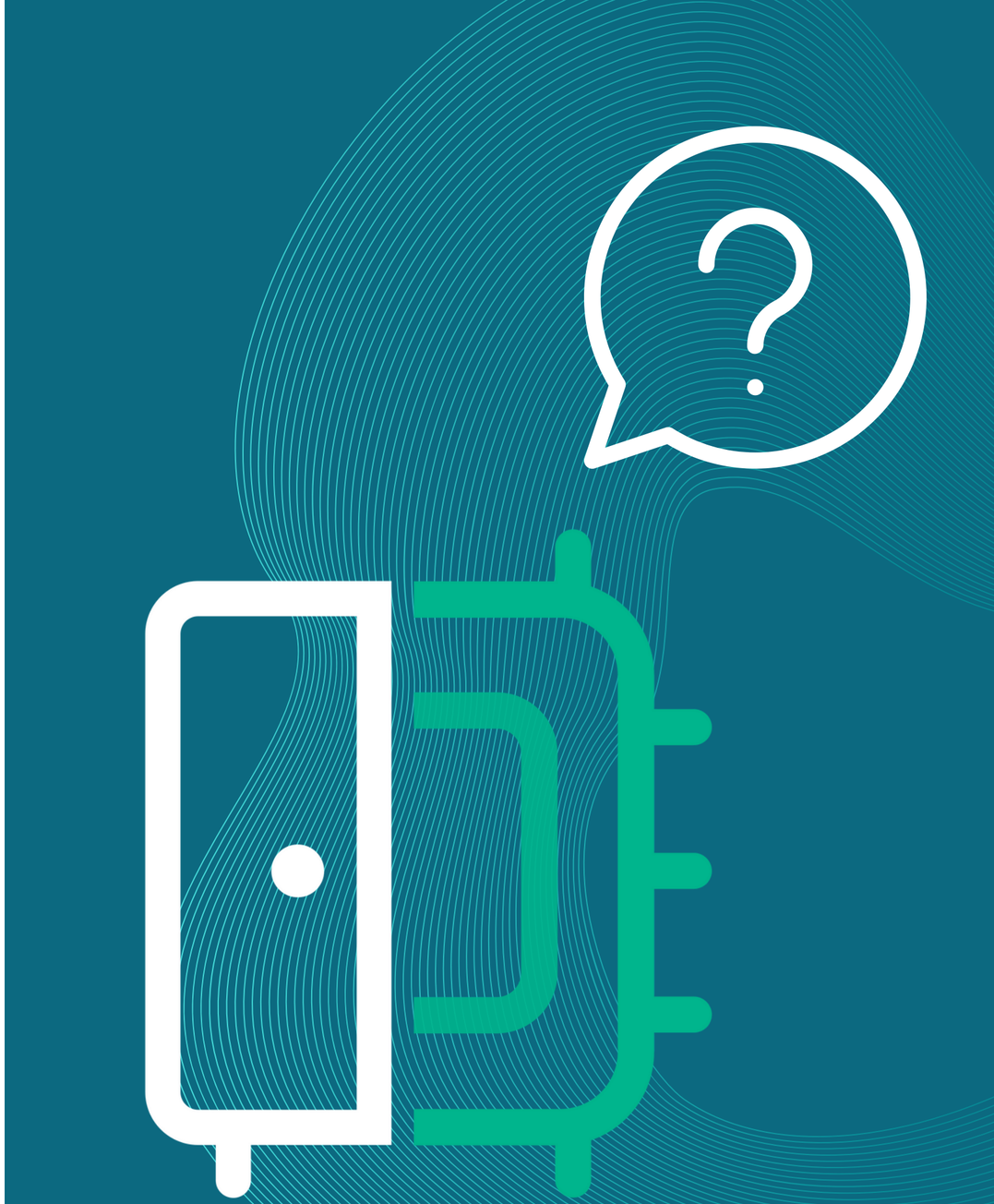
09.02.2023

Michael Huber, Philipp Thalhammer, Sami Strack, Sebastian Müller, Agnes Reda

Why Closet.Ai ?

A smart chatbot that helps decide what to wear for the day or even for a special occasion.

For Everyday Decision Difficulties when choosing an outfit



Closet.Ai

NLP: Analyze user chat messages

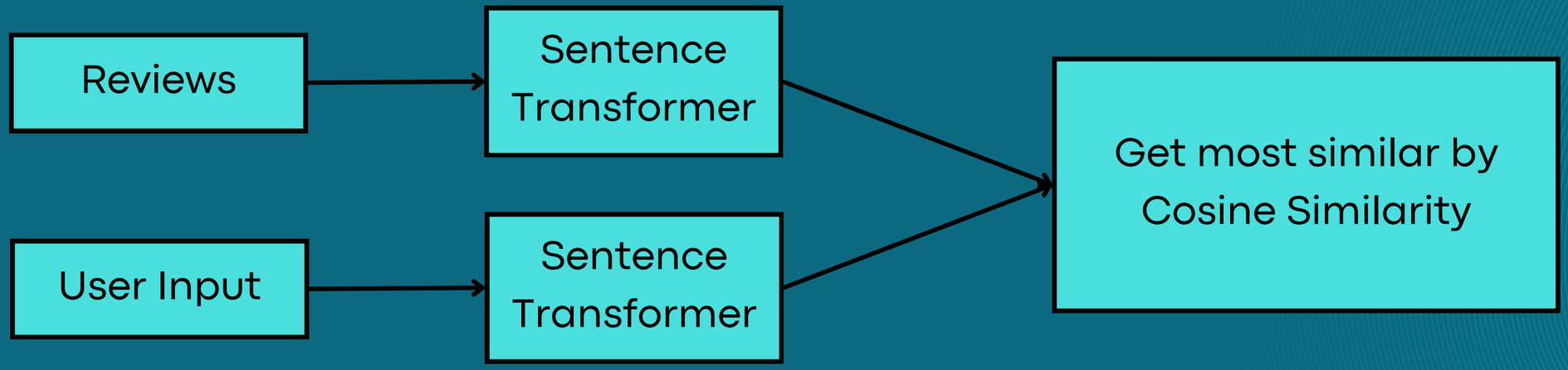
Sensor: Camera - recognize and classify user images

Recommender: Content-based recommendations for clothing items

Video Demo

NLP Part

Recommend an appropriate outfit according to the user input using sentence similarity

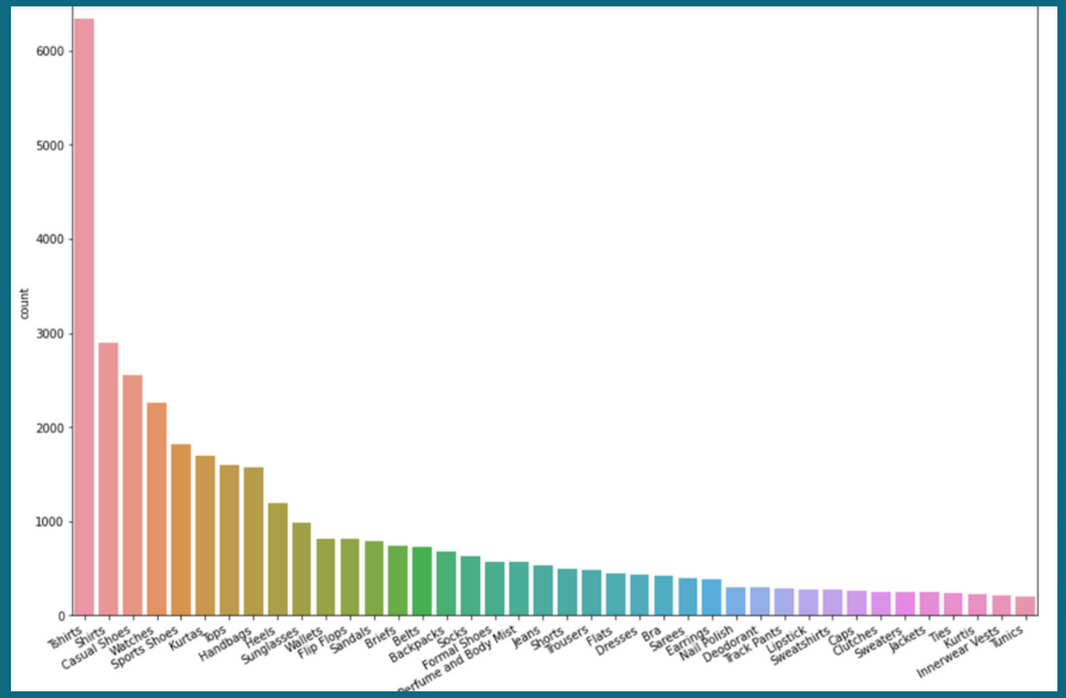


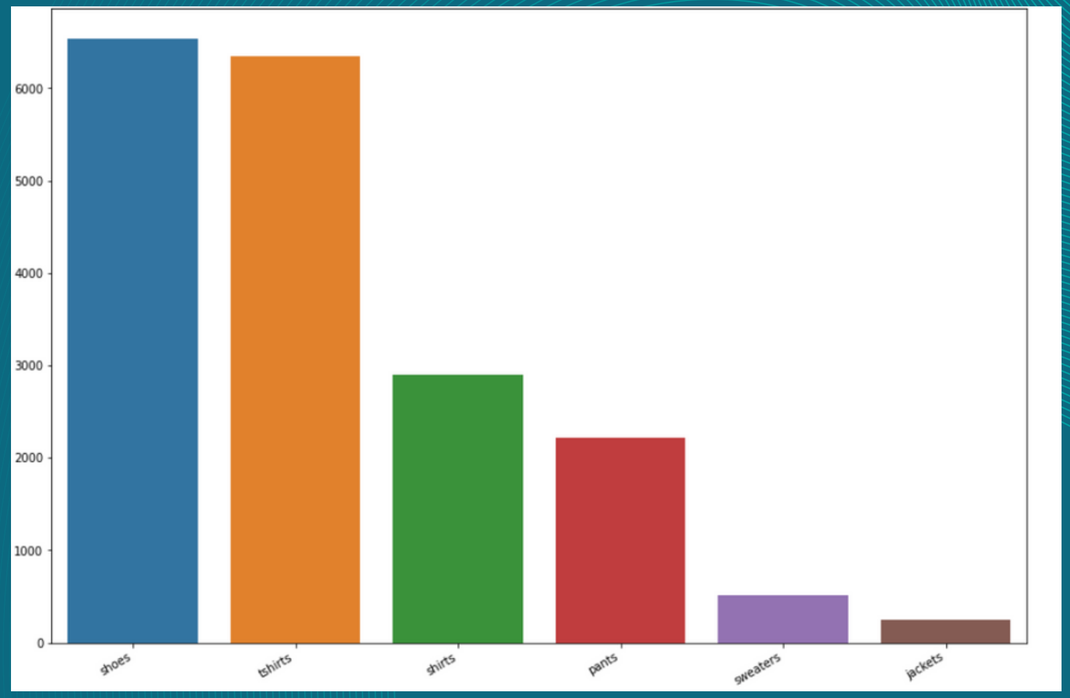
Data: Webscraped Reviews

Package: pip install -U sentence-transformers

- the best recommendation is the one whose embedding has the smallest distance to the input embedding

Image classification preprocessing



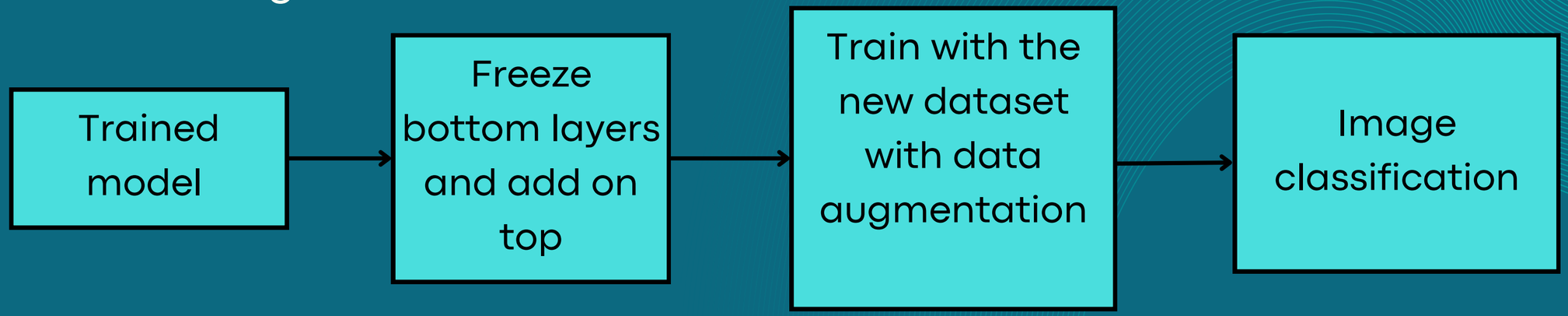


- Dataset: Fashion Product Images Dataset
- not every class found in the dataset is useful
- reduce to 6 different classes

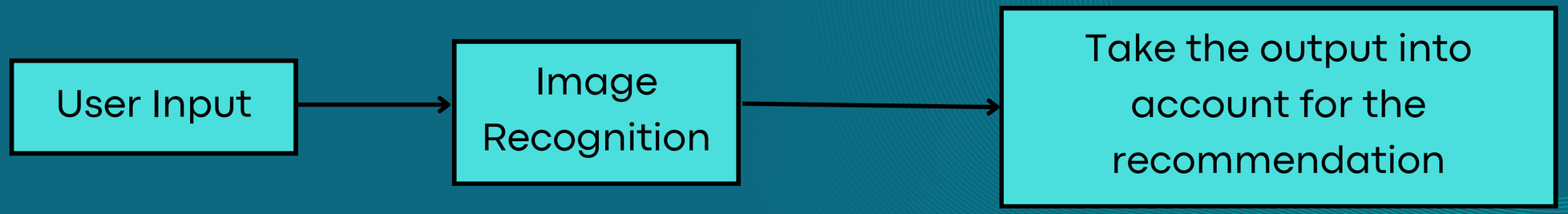
Image classification architecture

We want to implement the model by :

- Finetuning it

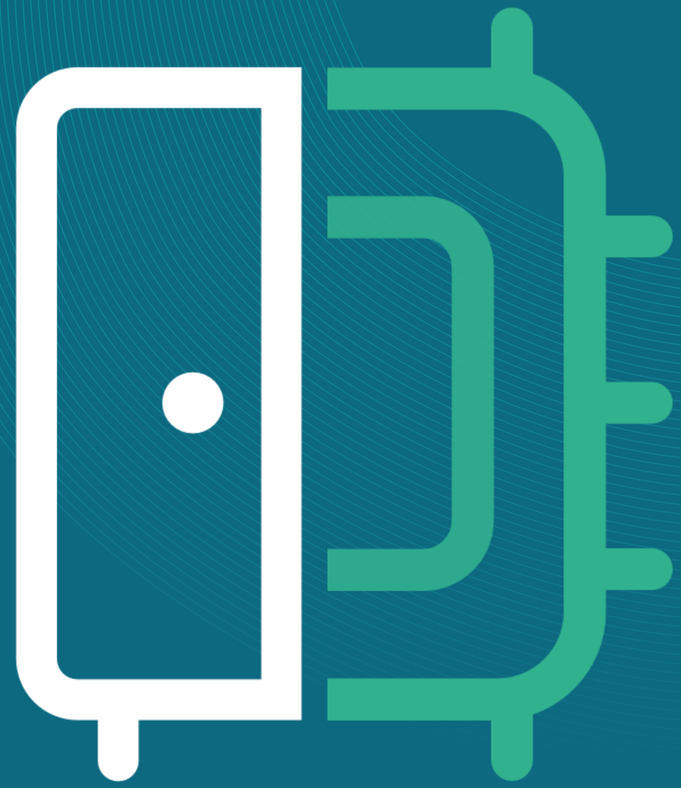


- Completing the user input



Our Vision

- Use own closet as a database
- Create visually appealing outfits
- integrate more categories
- Include weather information

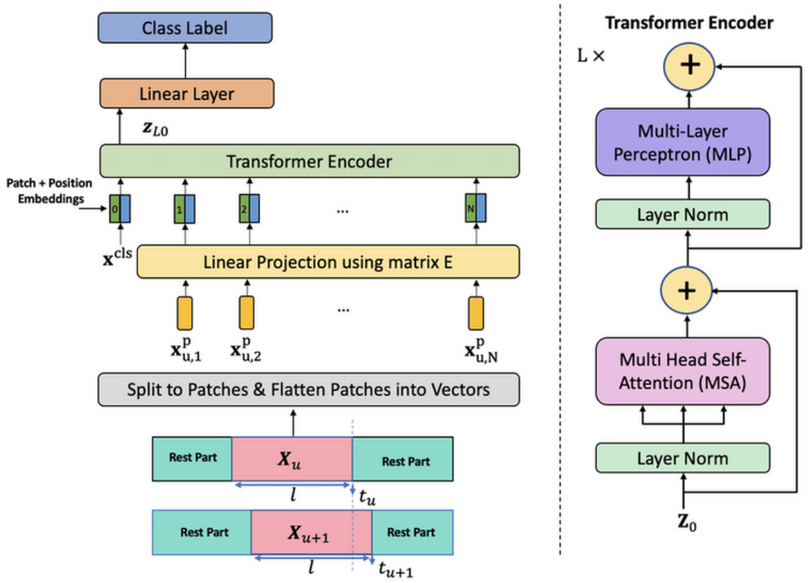


Closet.Ai

Backup Slides

ViT architecture

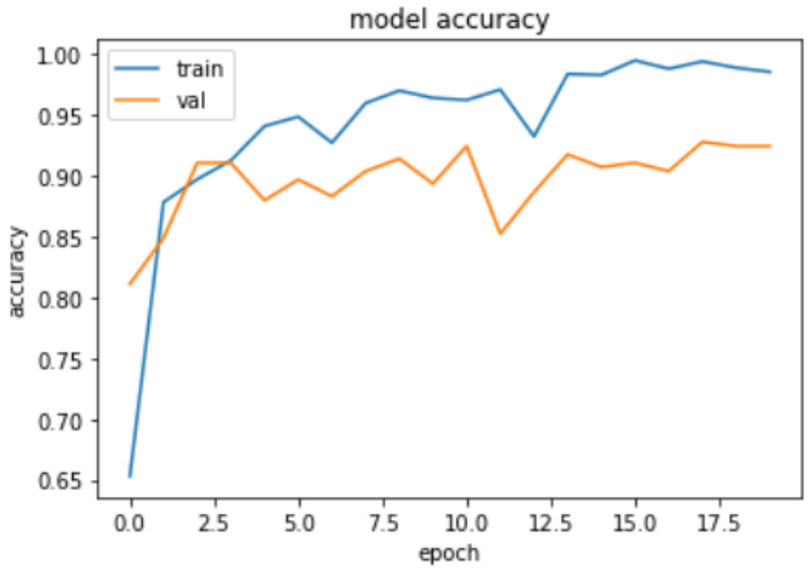
```
Model: "model_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 keras_layer_input (InputLay  [(None, 224, 224, 3)]    0
 er)

 keras_layer (KerasLayer)    (None, 1000)              86576872

 flatten_1 (Flatten)         (None, 1000)              0

 dense_1 (Dense)             (None, 1024)              1025024

 dropout (Dropout)           (None, 1024)              0

 dense_2 (Dense)             (None, 6)                 6150

=================================================================
Total params: 87,608,046
Trainable params: 1,031,174
Non-trainable params: 86,576,872
_________________________________________________________________
```



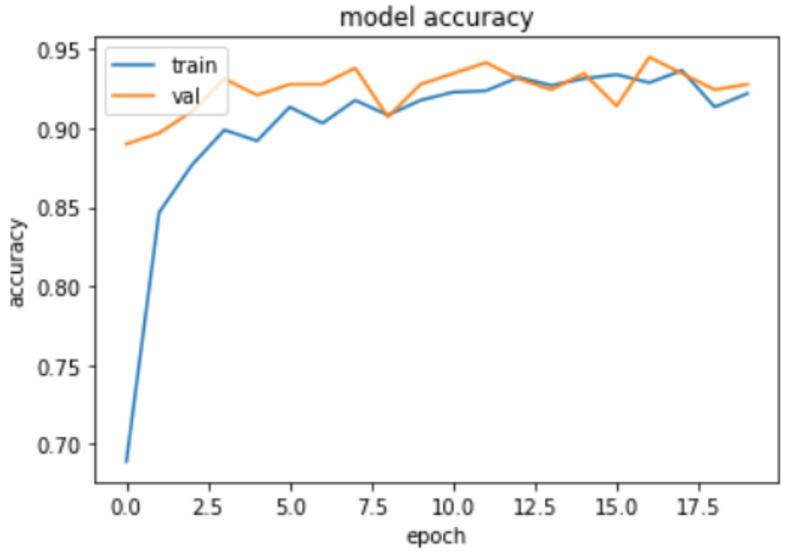
Source: https://www.researchgate.net/figure/Left-Pipeline-of-the-ViT-Architecture-Right-Architecture-of-the-Transformer-Encoder_fig1_356710938

Comparison of VGG16 and ViT

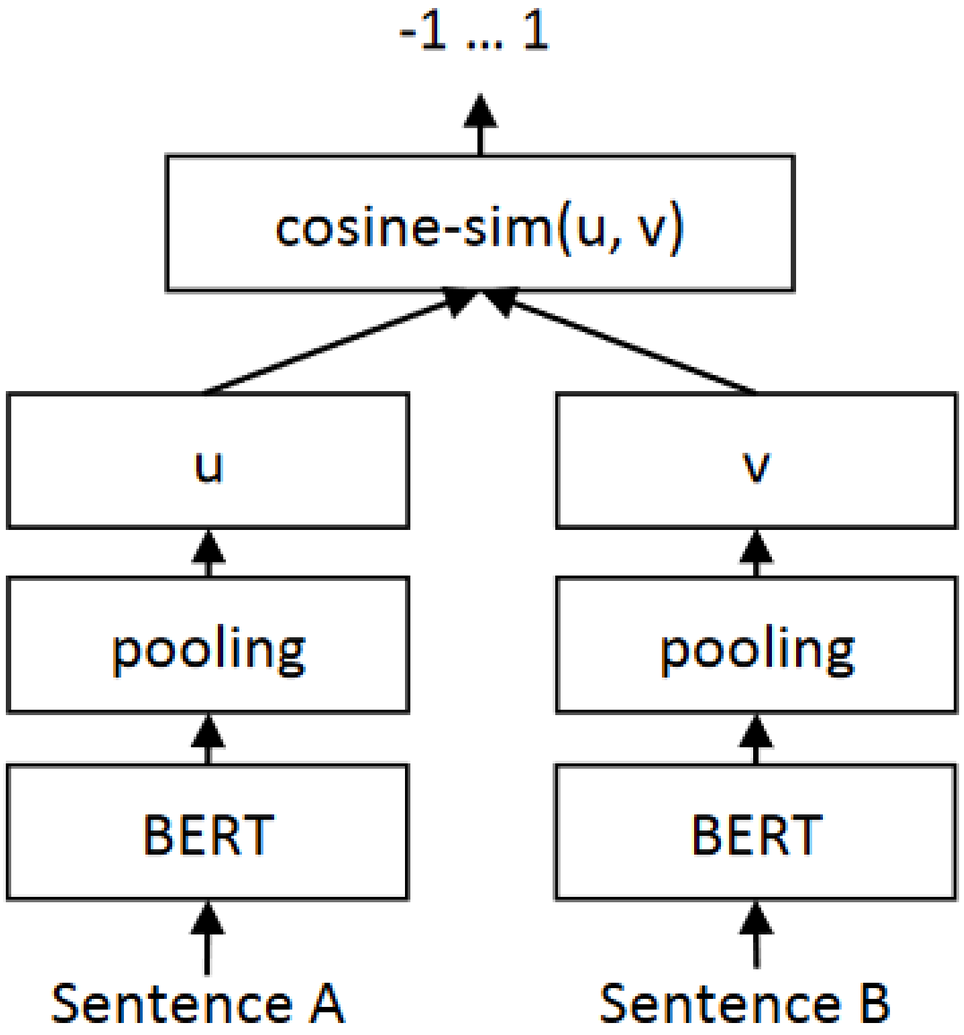
VGG16



ViT



SBERT architecture



https://arxiv.org/pdf/1908.10084.pdf

Datasets:

	id	gender	masterCategory	subCategory	articleType	baseColour	season	year	usage	productDisplayName	image	label
2134	8940	Men	Apparel	Topwear	Shirts	Red	Fall	2011.0	Casual	Indigo Nation Men Reversible Bling Red Shirts	8940.jpg	shirts
32420	14514	Men	Apparel	Topwear	Shirts	Brown	Fall	2011.0	Formal	Mark Taylor Men Brown & White Striped Shirt	14514.jpg	shirts
10195	27562	Men	Apparel	Topwear	Shirts	Purple	Summer	2012.0	Casual	Scullers Men Checked Purple Shirt	27562.jpg	shirts
16202	11048	Men	Apparel	Topwear	Shirts	Red	Fall	2011.0	Casual	Scullers Men Check Red Shirts	11048.jpg	shirts
29769	20140	Men	Apparel	Topwear	Shirts	White	Summer	2012.0	Casual	Wrangler Men Check White Shirt	20140.jpg	shirts
...	...	...	...	...	...	...	...	...	...	...	...	...
30933	13105	Men	Apparel	Topwear	Jackets	Black	Fall	2011.0	Sports	ADIDAS Men Ess 3s Rainjkt Black Jackets	13105.jpg	jackets
27747	31317	Women	Apparel	Topwear	Jackets	Teal	Summer	2012.0	Casual	W Women Teal Jacket	31317.jpg	jackets
3300	16190	Men	Apparel	Topwear	Jackets	Navy Blue	Fall	2011.0	Sports	Puma Men Heroes Navy Blue Jackets	16190.jpg	jackets
13531	8477	Women	Apparel	Topwear	Jackets	Blue	Fall	2011.0	Casual	Forever New Women Washed Blue Jacket	8477.jpg	jackets
2334	19342	Women	Apparel	Topwear	Jackets	Black	Fall	2011.0	Casual	United Colors of Benetton Women Solid Black Ja...	19342.jpg	jackets

1458 rows × 12 columns

Source :https://www.kaggle.com/datasets/paramaggarwal/fashion-product-images-dataset

+ own Dataset from Amazon Review Database

Webscraper:

- Made with python and beautiful soup
- Enter search-terms that you want to include in an array which are then used as the item-categories
- First Collect the ASINs of the first 5 pages of each search-term, then scrape up to 5 User-Reviews for each item

- A bigger dataset would have been nice, but the scraping already took over 2 hours