Horizon 2020

Understanding Europe's Fashion Data Universe

Dataset of Annotated Images

Deliverable number: D6.1

Version 2.0

Funded by the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 732328

Project Acronym:	FashionBrain
Project Full Title:	Understanding Europe's Fashion Data Universe
Call:	H2020-ICT-2016-1
Topic:	ICT-14-2016-2017, Big Data PPP: Cross-sectorial and cross-lingual data integration and experimentation
Project URL:	https://fashionbrain-project.eu

Deliverable type	Other (O)
Dissemination level	**Confidential** (C)
Contractual Delivery Date	31/12/2017
Resubmission Delivery Date	27/02/2019
Number of pages	12, the last one being no. 6
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Change Log

Version	Date	Status	Partner	Remarks
1.0	20/04/2018	Final	Zalando	Rejected 15/10/2018
1.1	15/02/2019	Revised Draft	Zalando	
2.0	27/02/2019	Resubmitted Final	Zalando	

Deliverable Description

A dataset that represents the domain of searchable images for D6.4 including all necessary labelings and annotations to perform required training of model parameters.

Abstract

The core goal of FashionBrain work package 6 is to "make images searchable by text" for images in the fashion domain. The first deliverable in this work package, D6.1, is an annotated dataset of fashion products from the Zalando catalogue. This dataset represents each fashion item with two images and a set of associated attribute-value pairs. An example of such an attribute-value pair is the attribute "main color" that can take values such as "red" and "green". The dataset presented here is the basis of research and development in neural information retrieval and will be used to train the text-image search system that we present as overall result of work package 6. In month 12 (M12), we released this dataset to the FashionBrain consortium as a CSV file. This document accompanies the deliverable and gives an overview of the dataset, the image domain and the different types of attributes and values that it contains. We also discuss how we distribute this dataset to the consortium.

Important note: This dataset is marked as **confidential** in the grant agreement, i.e. it may only be shared within the consortium, but not distributed to third parties without our explicit approval.

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List of Acronyms and Abbreviations

CSV	Comma Separated Values
EN	English
SKU	Stock Keeping Unit
WP	Work Package

1 Introduction

One of the core goals in the FashionBrain project is to develop novel technologies to improve the search experience for customers that are browsing an online fashion catalogue. As outlined in the strategy deliverable D1.2, the quality of the browsing and search experience has a direct impact on the ability of retailers to sell their products online: The more effectively we can match a user to a product he or she is looking for, the higher the chances that customers will complete a purchase. For this reason, much of WP 6 is dedicated to research in novel information retrieval technologies that match a customer query to a ranked list of products.

Information retrieval for fashion. The domain of fashion brings particular challenges for information retrieval technologies in that it is more *visually driven* than other types of information retrieval, meaning that search results are mostly presented to customers visually as a list of product images with titles. This means that customers in large part make purchasing decisions on whether they can find a fashion item with images that match what they are looking for. Since users typically browse online catalogues either through the use of filters (e.g. by restricting the catalogue to categories such as "hiking shoes" or brands such as "Adidas") or through full text search queries ("hiking shoes from Adidas"), we therefore seek to develop information retrieval systems capable of matching such queries to images.

An image-attribute dataset for fashion. This document accompanies deliverable D6.1 which is an annotated dataset that represents products as images paired with matching attribute-value pairs. An example of such an image is given in Figure 1.1: Here, we see a fashion item that is represented by two images and a list of attributes. The two images are always one still of the fashion item and one picture of a model wearing it. The list of attributes is of variable length since some attributes are set for all fashion items (such as a main color), while others are set only for some items (such as a "trend" name).

The example in Figure 1.1 has a brand ("Anna Fields"), a main color tag ("purple"), a material tag ("polyester") and a trend description tag ("70s / Boho") set. It also has a name as provided by the supplier, which as this example shows is often descriptive ("maxi dress, sleeveless with aop and binding band at neck") and intended to be read together with the article name and category.

Image 1

Image 2

Attribute-Value Pairs

BRAND_NAME: "Anna Field"

ARTICLE_NAME: "maxi dress, sleeveless with aop and binding band at neck"

MAIN_COLOR_EN: "purple"

MATERIAL_EN: "polyester"

TREND1_EN: "70s / Boho"

Figure 1.1: Example item in dataset: For each fashion item we provide two images (one still and one model picture), as well as a list of attribute-value pairs. This figure only shows a subset of all attributes of this item.

1.1 Placement of this Deliverable within FashionBrain

In this report for deliverable *D6.1 "Dataset of annotated images"*, we present a dataset for the purpose of research into attribute-image information retrieval. This dataset is further enriched with additional layers of annotation in deliverable D6.4 and will be used to train text image search for deliverables D6.3 and D6.5.

As such, the requirements for the dataset are derived from the business scenarios identified in *D1.2 "Requirement analysis document"*, in particular:

- Scenario 1: End-To-End Multi-language Search
  - Challenge 1: Mapping Search Intentions to Product Attributes
  - Challenge 2: End-To-End Learning

2 Dataset

For research into neural information retrieval for fashion, we identified the domain of *dresses* to be particularly interesting as we find a wide variety of aspectual differences that can be detected both visually as well as described either with structured attributes or unstructured textual descriptions. Example aspects of dresses include: the length of the dress ('short', 'long', 'knee-length'), the pattern ('striped', 'floral', 'spotted' etc.), the sleeves ('long sleeved', 'short sleeved', 'sleeveless'), the style, the hemline, the neckline, the color, the occasion ('wedding', 'party'), among others.

With this dataset release, we release a sample of 8,700 dresses, each consisting of a set of images and associated metadata that we use as a main dataset to test our text-to-image search prototypes.

2.1 Attributes and Values

For each item, there are up to 19 attributes set. Some attributes, such as "main color" are set for every item. Many attributes, such as "second color" are sparse and set only for items that have a second main color (such as a dress with black and white stripes). The 19 attributes are as follows:

SKU The unique identifier of this fashion item in the Zalando product catalogue

BRAND_NAME String value indicating the brand of the item. Labeled for all items. Examples are '*Superdry*' and '*Adidas originals*'.

ARTICLE_NAME String value indicating the name of the item as provided by the supplier. Examples are '*New Fluid Chiff*' and '*Chiffon midi dress*'. These names are often descriptive and are read together with the brand name.

MAIN_COLOR Main color of the dress described in a German language tag. Labeled for all items. String value that may be one of ['*blau*', '*dunkelblau*', '*weiss*', '*schwarz*', '*rosa*', '*rot*', '*grau*', '*nude*', '*blaugrau*', '*bunt*', '*mint*', '*light-blue denim*', '*offwhite*', '*khaki*', '*hellbraun*', '*dunkelgrün*', '*grün*', '*beige*', '*blue denim*', '*gelb*', '*hellblau*', '*royal*', '*pink*', '*mauve*', '*beere*', '*hellrot*', '*dunkelgrau*', '*koralle*', '*anthrazit*', '*hellgrau-meliert*', '*türkis*', '*grau-meliert*', '*stone-blue denim*', '*orange*', '*dunkelgrau-meliert*', '*apricot*', '*blau-meliert*', '*hellgelb*', '*taupe*', '*lila*', '*oliv*', '*petrol*', '*dunkelgelb*', '*silber*', '*sand*', '*ocker*', '*flieder*', '*rot-meliert*', '*hellgrün*', '*hellbraun-meliert*', '*gold*', '*white denim*', '*rot-metallic*', '*dark-blue denim*', '*dunkelrot*', '*braun*', '*bordeaux*', '*grey denim*', '*pink-meliert*', '*rinsed denim*', '*camel*', '*senf*', '*hellgrau*', '*flieder-meliert*', '*bleached denim*', '*lachs*', '*rosegold-farbig*', '*schwarz-meliert*', '*rosa-meliert*', '*stein*', '*cognac*',

'*bronze denim*', '*neonpink*', '*black denim*', '*dunkelblau-meliert*', '*grün-meliert*', '*dunkelbraun*', '*schwarz-metallic*', '*petrol-meliert*', '*tan*', '*dunkellila*', '*apricot-meliert*', '*tanne*', '*bordeaux-meliert*', '*kupfer*', '*grau-metallic*']

MAIN_COLOR_EN Main color of the dress described in an English language tag. String value that may be one of ['*blue*', '*dark blue*', '*white*', '*black*', '*rose*', '*red*', '*grey*', '*nude*', '*blue-grey*', '*multicoloured*', '*mint*', '*light blue*', '*off-white*', '*khaki*', '*light brown*', '*dark green*', '*green*', '*beige*', '*blue denim*', '*yellow*', '*royal blue*', '*pink*', '*mauve*', '*berry*', '*light red*', '*dark gray*', '*coral*', '*anthracite*', '*Mottled light grey*', '*turquoise*', '*Mottled grey*', '*stone blue*', '*orange*', '*Mottled dark grey*', '*apricot*', '*Mottled blue*', '*light yellow*', '*taupe*', '*purple*', '*oliv*', '*petrol*', '*dark yellow*', '*silver*', '*sand*', '*ochre*', '*lilac*', '*Mottled red*', '*light green*', '*Mottled light brown*', '*gold*', '*white denim*', '*rost*', '*dark red*', '*brown*', '*bordeaux*', '*grey denim*', '*Mottled pink*', '*rinsed*', '*camel*', '*Mustard*', '*light grey*', '*Mottled lilac*', '*bleached denim*', '*salmon*', '*Rose gold*', '*Mottled black*', '*Mottled rose*', '*stone*', '*cognac*', '*bronze*', '*neon pink*', '*black denim*', '*Mottled dark blue*', '*Mottled green*', '*dark brown*', '*Metallic black*', '*Mottled teal*', '*Tan*', '*dark purple*', '*mottled apricot*', '*fir*', '*Mottled bordeaux*', '*copper*', '*Metallic grey*']

SECOND_COLOR Secondary main color, sparsely labeled with a German language tag. String value that may be one of ['*weiss*', '*light-blue denim*', '*schwarz*', '*offwhite*', '*rot*', '*koralle*', '*dunkelblau*', '*gold*', '*hellgrau*', '*grün*', '*silber*', '*gelb*', '*blau*', '*mint*', '*petrol*', '*bunt*', '*ocker*', '*orange*', '*cognac*', '*nude*', '*grau*', '*türkis*', '*pink*', '*beige*', '*taupe*', '*braun*', '*royal*', '*bordeaux*', '*camel*', '*rosa*', '*hellblau*', '*hellgrün*', '*khaki*', '*kupfer*', '*flieder*', '*grau-meliert*', '*hellgrau-meliert*', '*dunkelgelb*', '*beere*', '*dunkelgrün*', '*senf*']

SECOND_COLOR_EN Secondary main color, sparsely labeled with an English language tag. String value that may be one of ['*white*', '*light blue*', '*black*', '*off-white*', '*red*', '*coral*', '*dark blue*', '*gold*', '*light grey*', '*green*', '*silver*', '*yellow*', '*blue*', '*mint*', '*petrol*', '*multicoloured*', '*ochre*', '*orange*', '*cognac*', '*nude*', '*grey*', '*turquoise*', '*pink*', '*beige*', '*taupe*', '*brown*', '*royal blue*', '*bordeaux*', '*camel*', '*rose*', '*light green*', '*khaki*', '*copper*', '*lilac*', '*Mottled grey*', '*Mottled light grey*', '*dark yellow*', '*berry*', '*dark green*', '*Mustard*']

THIRD_COLOR Tertiary main color, sparsely labeled for fashion items that have three main colors. Labeled with a German language tag. String value that may be one of ['*weiss*', '*offwhite*', '*bunt*', '*schwarz*', '*hellgelb*', '*blau*', '*grün*', '*rot*', '*grau*']

THIRD_COLOR_EN Tertiary main color, sparsely labeled for fashion items that have three main colors. Labeled with an English language tag. String value that may be one of ['*white*', '*off-white*', '*multicoloured*', '*black*', '*light yellow*', '*blue*', '*green*', '*red*', '*grey*']

MAIN_MATERIAL Main material of the item, sparsely labeled with a German tag. May be one of ['*Polyester*', '*Baumwolle*', '*Modal*', '*Viskose*', '*Polyamid*']

MAIN_MATERIAL_EN Main material of the item, sparsely labeled with an English tag. May be one of [‘*polyester*’, ‘*cotton*’, ‘*modal*’, ‘*viscose*’, ‘*polyamide*’]

PATTERN A tag indicating a visible pattern on the item. Sparsely labeled with a German tag. May be one of [‘*Spitzenoptik*’, ‘*gestreift*’, ‘*floral*’, ‘*Printed*’, ‘*Norwegermuster*’, ‘*Paisley*’, ‘*sonstige*’, ‘*Bunt*’, ‘*Unifarben*’, ‘*kariert*’]

PATTERN_EN A tag indicating a visible pattern on the item. Sparsely labeled with an English tag. May be one of [‘*Lace*’, ‘*Stripes*’, ‘*Floral*’, ‘*Print*’, ‘*Patterned*’, ‘*Paisley*’, ‘*Other*’, ‘*Colourful*’, ‘*Plain*’, ‘*Checked*’]

COMMENTS Washing instructions as they appear on the item. Sparsely labeled.

TREND1_EN A tag indicating a trend. Sparsely labeled with an English tag. May be one of [‘*New classics*’, ‘*50s*’, ‘*70s / Boho*’]

TREND2_EN A tag indicating an additional trend. Sparsely labeled with an English tag. May be one of [‘*Colour blocking*’, ‘*Retro romance*’]

MAIN_SUPPLIER_COLOR_DESCR One of 2626 distinct color descriptions as provided by the suppliers. These tags differ from the “MAIN_COLOR” tag in that they are not normalized across suppliers and often use color names designed to advertise. Examples are ‘*Navy Blazer*’ and ‘*White Alyssum*’.

IMAGE_1 A download link to an image depicting a still of the fashion item.

IMAGE_2 A download link to an image depicting a model wearing the fashion item.

2.2 Distribution

The dataset is released as a comma-separated file in CSV format where each line represents an item and its attribute values. However, as this deliverable is marked as “confidential”, this data may not be shared outside of the consortium and not be published to the research community.

3 Conclusion and Outlook

The dataset produced for this deliverable is the basis for much work in work package 6. It consists of images and attribute-value pairs that describe semantics such as brand, main color and trend. However, we also note that many aspects that make the domain of dresses interesting are not yet represented in this dataset. This includes examples like sleeve length or hemline, but also more subjective semantics such as "occasion" (for which occasions is this fashion item deemed fitting). Furthermore, we note in our initial experiments that even structured attributes that exist are limited by their vocabulary and coverage. A good example of this is the notion of "trend", which is somewhat subjective and open-ended, meaning that new trends may appear and names may vary. While "trend" currently exists as a structured attribute in the presented dataset, the vocabulary is limited and coverage incomplete.

To address these limitations, we will cooperate with partners USFD and UNIFR to add another layer of annotation to this data that goes beyond the fields we currently have available in our database. The result of this work will be deliverable D6.4. In particular, we will jointly design and execute a crowdsourcing approach in which we will present images from this dataset to multiple crowd workers and ask them to provide a human language description of what they see in the image. Crowd workers will therefore not be limited to a set of pre-defined attributes and a vocabulary of values, but rather use free text to describe the image and everything they see in it. We believe that this data will be instrumental in training better neural information retrieval systems.