

Brand Management

Visual Listening: Extracting Brand Image Portrayed on Social Media

27 April 2020 - Zurich



**University of
Zurich** ^{UZH}

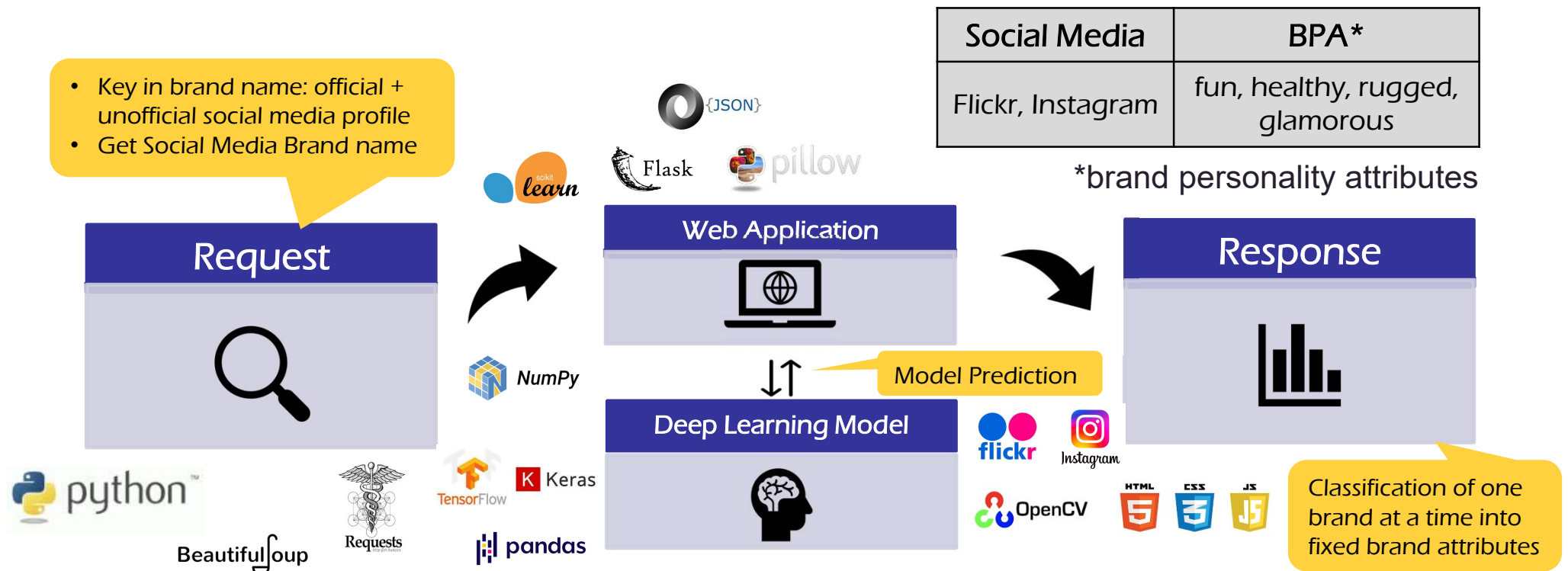
Agenda

- ① Introduction
- ② Marketing Benefits of the Web Application
- ③ Design of the Deep Learning Model
- ④ Architecture and Challenges
- ⑤ Limitations and Improvements

Introduction

Task: Create a Web Application to help brand managers analyze brands based on the classification of official and unofficial social media brand image posts

Approach: Full-Stack engineering pipeline combining Deep Learning models, data collection, data preprocessing, and Web Application frameworks



Marketing Benefits of the Web Application



① Consumer Insights - Better gauge consumer brand perception

San Pellegrino (Instagram unofficial): 21% fun and 70% healthy



② Benchmarking - Brand positioning & comparison with competitors

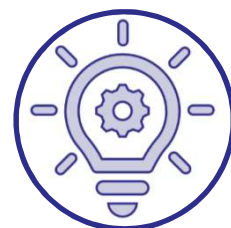


San Pellegrino (Instagram official): 54% fun and 41% healthy

Evian (Instagram official): 13% fun and 59% healthy

San Pellegrino (Instagram unofficial): 21% fun and 70% healthy

Evian (Instagram unofficial): 32% fun and 35% healthy



① New Opportunities - Improve corporate brand personality

Marketing department can focus on the mismatch and develop corresponding strategies to harmonize their brand's personality

Design of the Deep Learning Model

- **OneVsRest Multiclass Image Classification Problem**

We downloaded manually annotated images from Flickr using Linux-on-Windows and classified them into one of the four attributes fun, healthy, glamorous, and rugged. For the final classification, we took the argmax probability.

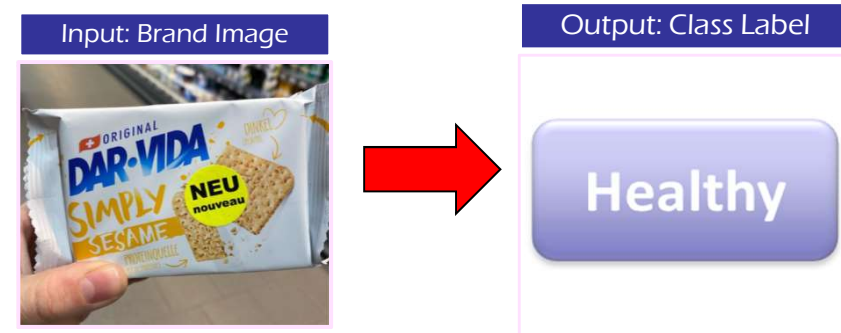
- **Transfer Learning Approach**

We used a pre-trained «ResNet50» model with more than 23 million parameters and added our own last fully connected classifier layer.

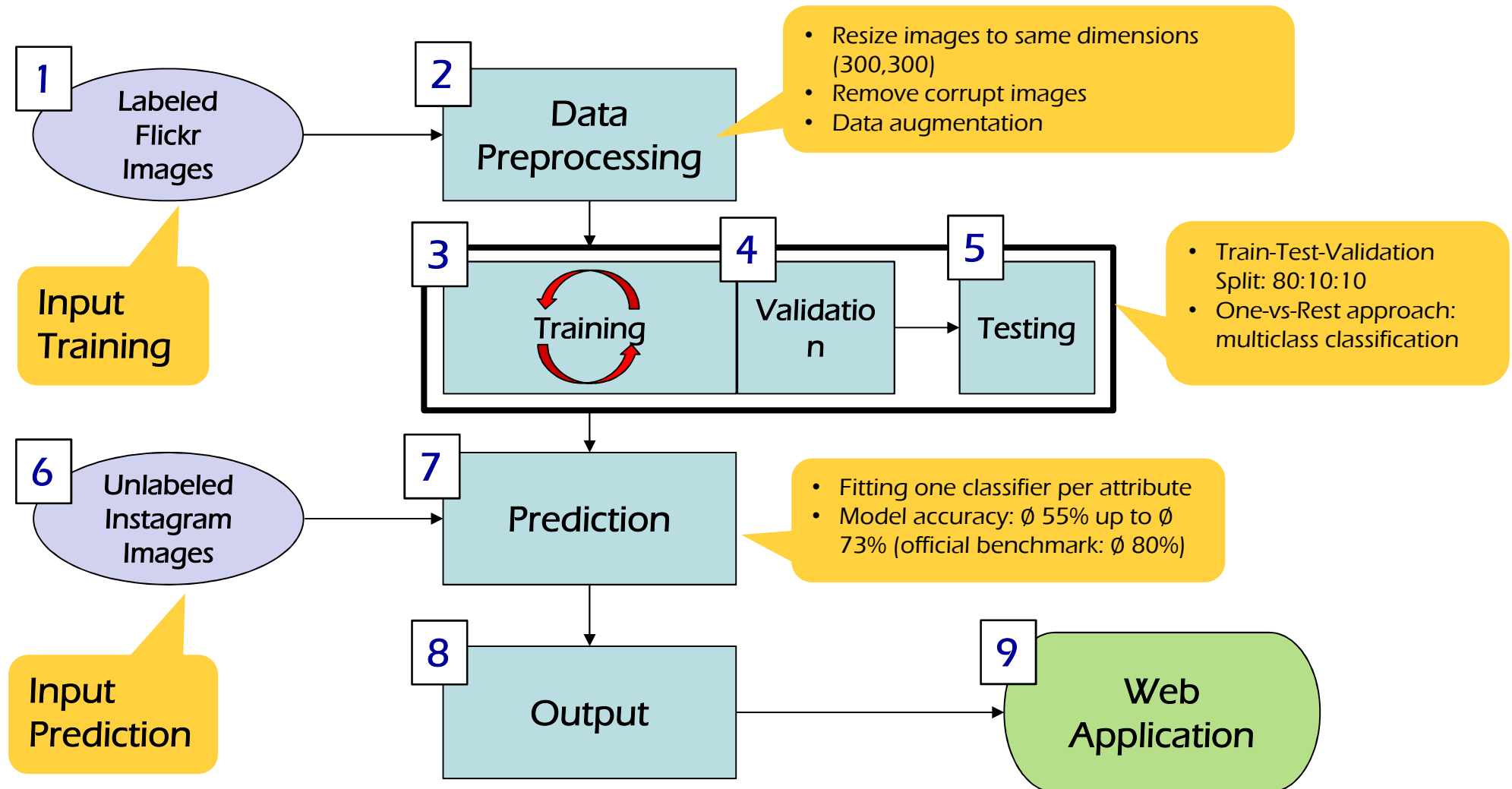
- **Model Prediction**

We predicted class labels for brand images.

Example: Brand «DAR-VIDA»



Architecture and Challenges



Limitations and Improvements

- **Data collection:** adding e.g. Pinterest and Twitter images (developers API application still pending), matching social media handles to user input, performance enhancements to collect more images, added Flickr images for 12 more attributes
- **Attribute selection:** adding more attributes, e.g. calm, cheerful, confident, creative, exciting, fiery, happy, intelligent, natural, reliable, strong, wholesome
- **Applicability due to copyright:** obtaining proper licenses for commercialisation of the Web App
- **Model:** hyper-parameter tuning to find out the best parameters for the models, i.e optimizer, loss function, numbers of layers to fine tune, multilabel classification : associating an image with multiple attributes instead of single attribute, build smaller model for easy deployment
- **Web App:** error handling, UI enhancements, database integration, image display
- **Deployment:** starting with a simple pipeline and gradually increase its complexity to better understand arising problems, handling of server side issues on Google App Engine, Microsoft Azure, or Heroku

Thank you for watching!



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