

The Hearst building logo, featuring the word "HEARST" in a bold, sans-serif font. The letter "H" is enclosed in a white square with a dark blue "H" inside. The letters "E", "A", "R", "S", and "T" are in a dark blue color.

HEARST

IS Datathon
GROUP 2 : UZAIR

INTRODUCTION

IMAGE CLASSIFICATION

PROBLEM STATEMENT

Generating Image tags and possibly captions for an existing system

BRIEF OVERVIEW

- Targeted dataset from Hearst has more than 1000 tags
- Each tag frequency is different and not balanced
- 9000+ images



PLAN

01

CLEANING & PREPROCESSING

Cleaning the tags , images and resize data

02

GENERATING TAGS

Generating tags for new images based on trained images

03

GENERATING CAPTIONS

Generate Captions based on the new tags generated for the images

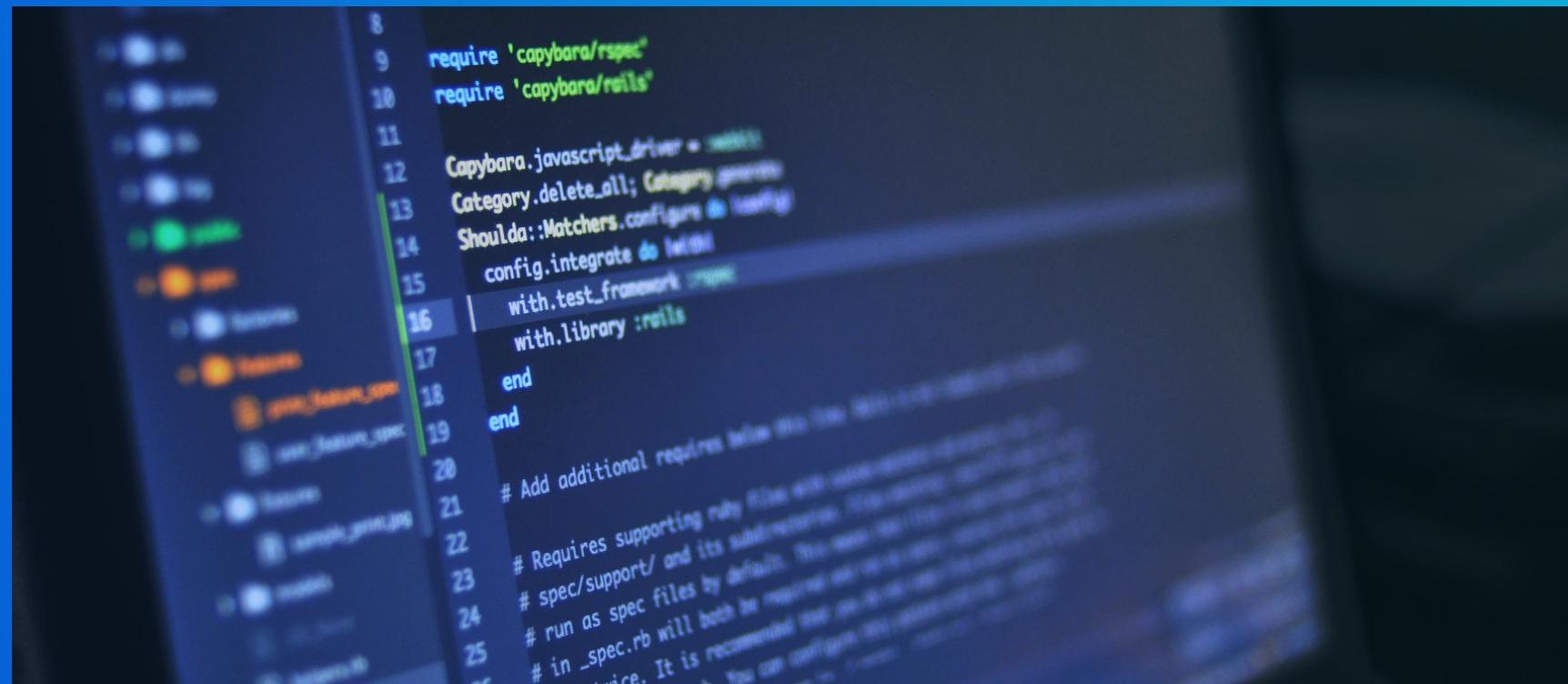
04

FUTURE SCOPE

Pros & Cons of solution provided with possibilities to integrate other models



CLEANING & PREPROCESSING



STEP 01: FILTERING TAGS

Removing all tags with frequency less than 100

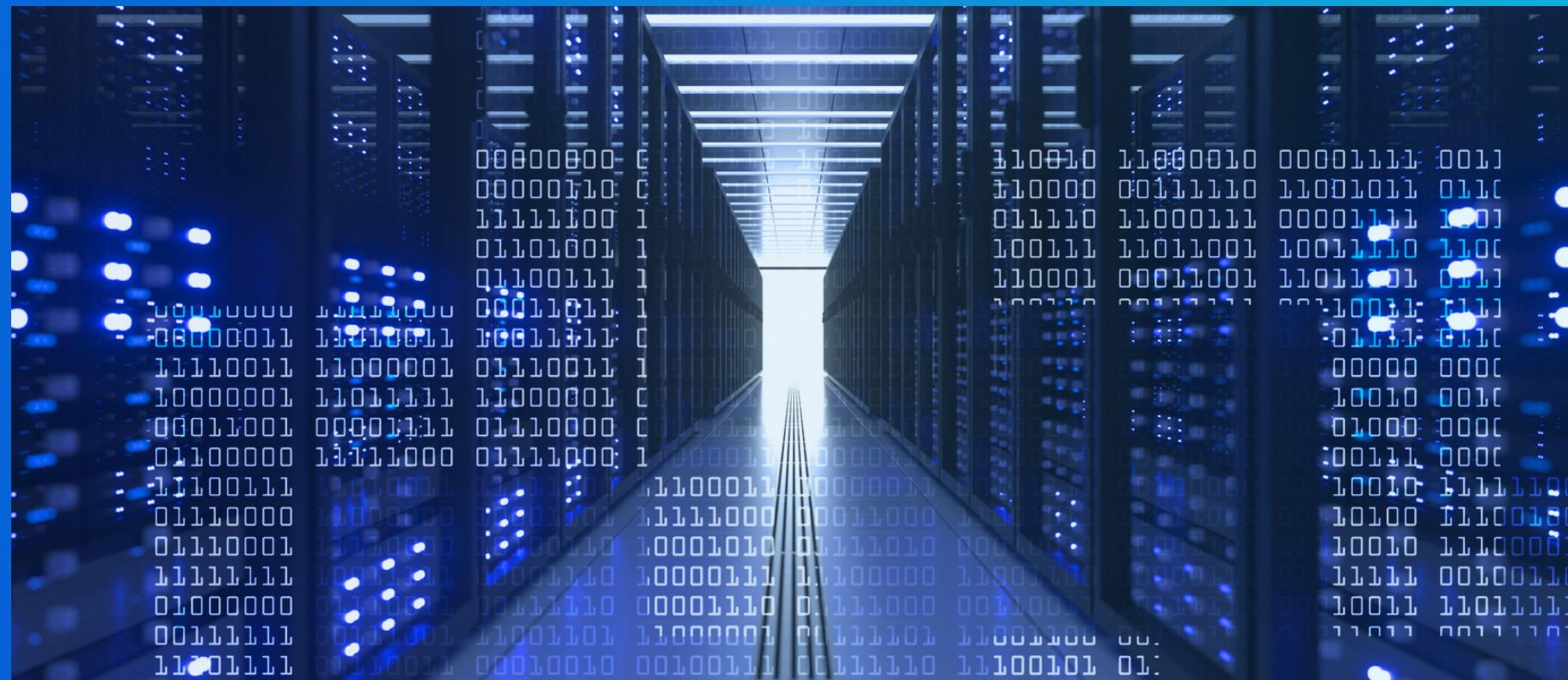
STEP 02: RESIZING IMAGES

Resizing images for processing in neural network
to generate feature vectors

STEP 03: FILTERING IMAGE DATA

Filtering images with inconsistent data format

GENERATING TAGS



STEP 01: IMAGE FEATURES

- ALS Recommender + Deep Neural Networks (solving cold start)
- Pre-trained model to create deep features

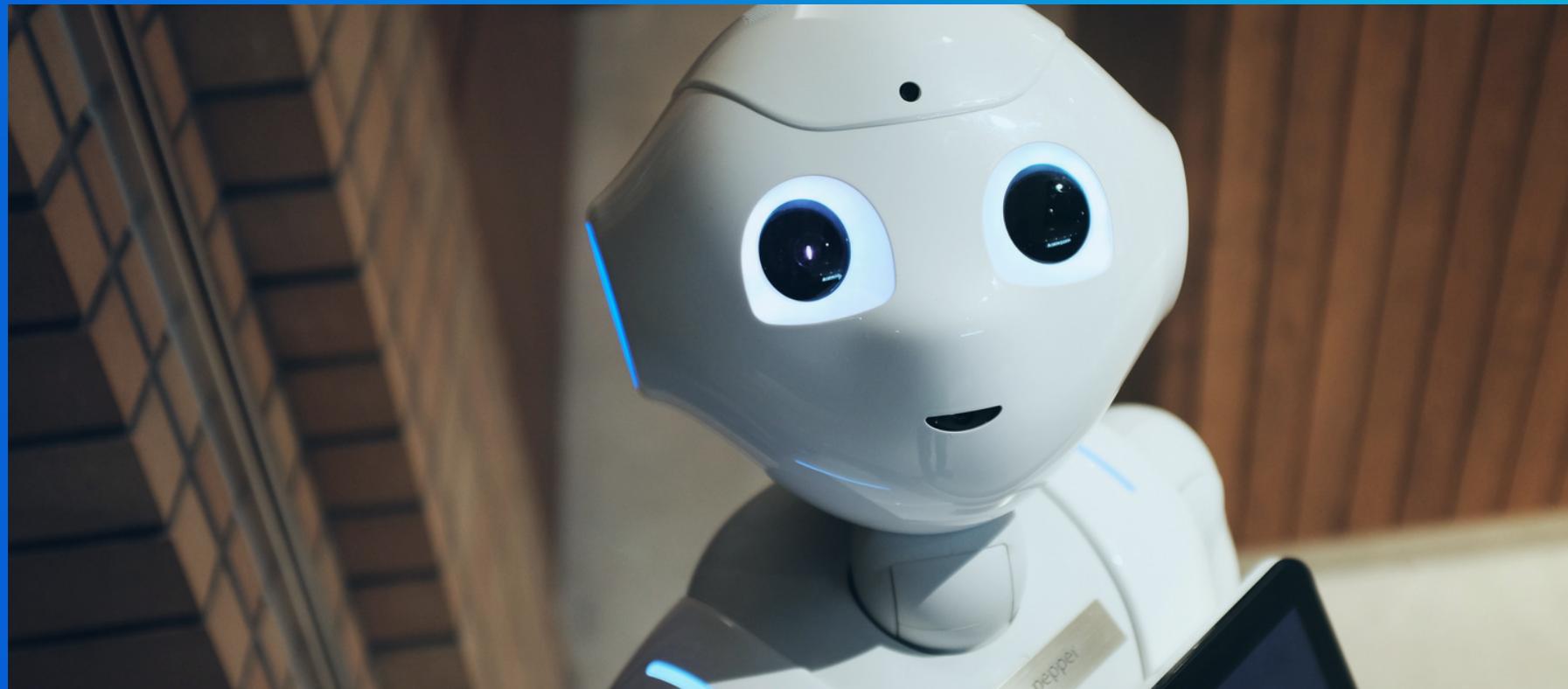
STEP 02: COLLABORATIVE FILTERING

- Suggest people who bought this also bought that (TAGS)
- k-NN to get most similar images (cosine similarity)

STEP 03: CREATE TAGS & METRICS

- Suggest top 5 most closest tags of the images
- Find accuracy over test dataset
- All 5 correct 62%

GENERATING CAPTIONS



STEP 01: BUILD ON EXISTING MODEL

- Free to use AI tools like Copy.ai for generation of captions

STEP 02: WEBSCRAPING

- Using Selenium to scrape data from website

STEP 03: AUTOMATION SCRIPTING

- Create automation scripts
- Generate captions of tags recommended

RESULTS

```
metadata_images[metadata_images["Record ID"]==207900891]["Keywords"].values  
array(['People @ Work,2018,Events,Friday,Texas,Texas 2018,Retreat'],  
      dtype=object)  
  
show_results('207900891')  
  
Events, People @ Work, Texas, Thursday, 2018, Texas 2018, Retreat, Friday, SRS, Steven R. Swartz
```

Original Hashtag: 207900891



Enhancements Learn How To

Free Instagram Caption Generator

What is your post about?

Events, People @ Work, Texas, Thursday, 2018

What tone should it be in?

good

Create Copy

Stay fresh and ahead of the curve at our next @work event on September 6th. RSVP here:

Copy

Texas Thursday's are always a good time. So glad to be part of something so special.

Copy

RESULTS

```
metadata_images[metadata_images["Record ID"]==206088961]["Keywords"].values  
array(['Frank Bennack,FAB,MAC,GCM,Michael A. Clinton,Frank A. Bennack,Victor Ganzi,Events,Michael C.  
C. Maurer,Gil Maurer,Hearst Tower,gala'],  
      dtype=object)  
  
show_results('206088961')  
Events, People @ Work, 44th Floor, FAB, Frank Bennack
```

Original Hashtag: 206088961



Announcements Learn How To

Free Instagram Caption Generator

What is your post about?

Events, People @ Work, 44th Floor, FAB, Frank Bennack

What tone should it be in?

good

Create Copy

The best ideas happen at the bar. Or on the roof. Or in this case, on the 44th floor. Thanks @frankbennack!

RESULTS



announcements Learn How To

Generator

What is your post about?

People @ Work, Hearst Magazines, Hearst magazines, Magazines, Community Outreach, Employee Image, Hearst Tower, Career Site

What tone should it be in?

good

Create Copy

It's a great place to work. If you need proof, just ask our employees: they're not just here—they're part of the @ HearstMag family. 😎

Copy

You're not just another face #HearstMagazines

Copy

Not only do we have great food, but we also have a great office! Our Hearst Tech Team is proudly showing off some of the epic tools they use here at the Tower.

Copy

FUTURE SCOPE



TAGS

- Can use NN to generate tags accompanied by recommender system
- Open to more learning
- Standardize formatting

CAPTION

- Limited free attempts
- Different types of captions
- Easy to use/reuse

MODEL

- Difficult to classify images
- Cross validation
- Fine tuned pre-trained model
- Larger dataset to train with high spec system