



AI Hackathon Problem Statement

There are three (3) problem statements for you to choose from. Carefully evaluate each problem before you dive into building your solution. Each team must work on one (1) problem statement only. Before we go further, let's go through quick rules of participation and other necessary guidelines.

Rules of Participation

- The contest starts on Thursday, 29th November 2019, 19:00:00 (IST).
- Entries submitted after the contest is closed, will not be considered, i.e., post 1st December 2019, 19:00:00 (IST).
- Maximum participants allowed per team are 3
- Participation is free-of-charge.
- Throughout the Hackathon, you are expected to respect fellow hackers and act with high integrity.
- WhatsApp group admins hold the right to block any participant found to use foul/disrespectful language.
- Shopcom holds the right to disqualify any participant at any stage of the competition if the participant(s) are deemed to be acting fraudulently.
- In case of any dispute over rankings and leaderboard, decision of Shopcom shall be final.
- Interview shortlisting will be done by us for winning and good entries basis our own criteria (apart from leaderboard ranking)

Guidelines

1. No proprietary software or libraries are to be used
2. We recommend using Python

For queries regarding the Hackathon, reach out to us at **+919643643634** (WhatsApp) or email us at admin@shopcom.in

Datasets will be provided for Problem Statements 2 & 3 at the start of the Hackathon.

Choose one of the following problem statements to work on:

| S. No | Problem Statement |
|-------|-------------------------------------------------------------|
| 1 | Classification of Garments |
| 2 | Parsing 2D Images of People into their Constituent Garments |
| 3 | Virtual Try-On |

(details of the problem statement continued on next page)

Guidelines for submission

For submission, a zip file containing the following is to be emailed at "admin@shopcom.in" and cc "shopcom.india@gmail.com"

- a) A folder with all your code
- b) A binary or pickle file representing your trained model
- c) A report about the work done - research, data generation/collection (if using foreign data), preprocessing, approach, improvements, etc. (preferably in PDF or LaTeX format)

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Problem Statement #1: Classification of Clothes

The problem statement is divided into two categories:

A) To gather, or crawl dataset from all websites or fashion websites where images are available in the following format. It should include images of a model wearing the cloth and a separate image of the cloth itself. Example shown below:



model + cloth (x_1, x_2, \dots, x_i)



cloth (y_1, y_2, \dots, y_i)

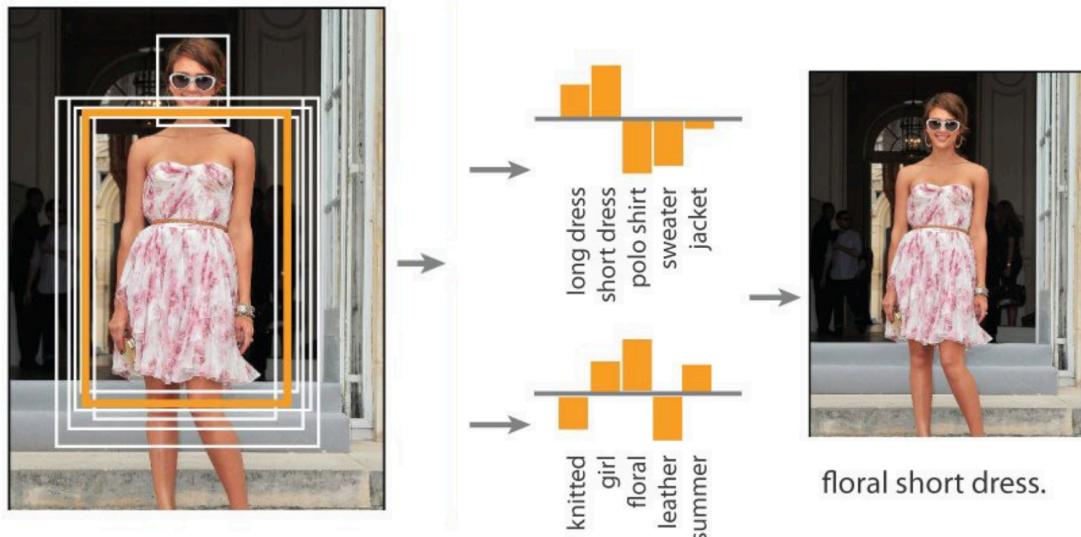
Build an external dataset of at least a 100,000 clean images containing multiple images of model + cloth, i.e., $x_1, x_2, x_3, \dots, x_n$ and one more images of the cloth, i.e., y_1, y_2, \dots, y_n .

Example websites to fetch images from – zalando.com, splootz.com, bewakoof.com, thesouledstore.com, spreadshirt.com, etc.

B) Image classification should be next and should at least include the following categorization; Gender – Male/Female cloth; Type – T-shirt/Shirt/Dress/Skirt/Jean/Suit and so on...; Sub-type – Short/Collar-less/Ben-neck and so on... along with probabilities. Further detailed, unique and relevant categorization would be awarded bonus points!

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Problem Statement #2: Parsing 2D images of people into their constituent garments

A) To provide an efficient model that helps to recognize and precisely parse pictures of people into their constituent garments. The detection involves returning specific regions of the clothing objects in a given image. For example, given an image of an individual wearing a full outfit, clothing object detection involves the prediction of boundary boxes that would capture and return distinct articles of clothing such as the shirts, pants, and shoes. Input – 2D image of a person wearing an outfit. Output data required – The model should return the distinct clothing articles worn by the person.

We are providing you with a dataset so that you get a direction in which to progress, but you are not restricted to only use the provided data. In fact, we hope you do use additional datapoints to arrive at greater results. We recommend using Python as it has pre-built libraries like TensorFlow and Keras to handle complex functions. We encourage innovative approaches to handling the given problem.

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If you are able to solve the above problem, move to the part B) for bonus points -

- B) Refer to the part (A) of Problem Statement #1 – “To gather, or crawl dataset from all websites or fashion websites...” and provide the solution to the same.

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Problem Statement #3: Virtual Try-On

Recent years have witnessed the increasing demands of online shopping for fashion items. Despite the convenience online fashion shopping provides, consumers are concerned about how a particular fashion item in a product image would look on them when buying apparel online. Thus, allowing consumers to virtually try on clothes will not only enhance their shopping experience, transforming the way people shop for clothes, but also save cost for retailers. Our goal is to synthesize a photo-realistic new image by overlaying a product image seamlessly onto the corresponding region of a clothed person.



The synthetic image is expected to be perceptually convincing, meeting the following criteria:

- (1) body parts and pose of the person are the same as in the original image
- (2) the clothing item in the product image deforms naturally
- (3) detailed visual patterns of the desired product are clearly visible, which include not only low-level features like color and texture but also complicated graphics like embroidery, logo, etc.

This is the problem that you have to tackle. We are providing you with a dataset so that you get a direction in which to progress, but you are not restricted to only use the provided data. In fact, we hope you do use additional datapoints to arrive at greater results. We recommend using Python as it has pre-built libraries like TensorFlow and Keras to handle complex functions. We encourage innovative approaches to handling the given problem.

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