Weekly meetings: Wed, Sun 8-9PM EDT

Next meeting: Wed, Nov. 11

# To-Do:

* Finalize outline of project
* Research implementation ideas
* Start github

# **Project Brainstorm:**

## Detection

* Description:
  + Using YOLOv5? For detection of the shoes from user photos
  + Get the orientation of the shoes (?!?!)
* Input:
  + Training/Test Data Set (Does this exist?? We need ground truth orientation data)
  + If limit training data, then need to limit application scope (orientation: side, top, etc)
* Output:
  + Detection of shoe and orientation from user photo
* Difficulties:
  + Getting training/test data with orientation

## Segmentation

* Description:
  + Segmenting for user photo
  + Segmenting for online retail store
* Input:
  + User photo
  + Retail Photo with multiple orientations
* Output:
  + Segmented Image without background
* Difficulties:
  + User photo: fine-tuning

Dataset:

<http://vision.cs.utexas.edu/projects/finegrained/utzap50k/>

(idk it contains .mat files instead of images)

Crawl shoes store websites for images?

<https://www.nike.com/kr/ko_kr/t/adult-unisex/fw/nike-sportswear/CT2904-002/imws12/acg-mountain-fly-gore-tex>

<https://www.kaggle.com/search?q=shoes+datasetSize%3Alarge>

<http://vision.cs.utexas.edu/projects/finegrained/utzap50k/>

<https://www.kaggle.com/abhimanyudasarwar/shoes-dataset>

<https://www.kaggle.com/balraj98/edges2shoes-dataset>

1 shoes 1 orientation

“Openness” of shoes (like sandals) limit to sneakers?

“Size” such as long boots matter too (probably)

Pretrained detection (box around shoes)

## Structure from Motion (TENTATIVE)

* Description: From the multiple orientations of the shoes from the retailer site, we need to either get the 3D reconstruction, or be able to map the shoe into a homography matching the user foot orientation.
* Input: The various snapshots of the shoes
* Output: 1) 3D Reconstruction OR 2) some way to map shoes into a orientation
* Difficulties: Professor said this was hard (3D construction)

## Image Stitching

* Description: Basically getting the shoe from retailer store and editing it into the user’s photo Not sure of the exact way to do this but
  + One idea is get contours and do a least squares fit based on the errors of how well they match (minimum).
    - Could orient the shoes so their longest dimension (the direction which the shoe points to) align between the retail shoes and users’ shoes
  + Another idea is, many you can use Harris Corner Detectors or something for feature matching. (BOG)
* Input: user photo, shoes photo in right orientation
* Output: The final picture output with retailer shoe “stitched” on.

# 

# Set timeline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Nov 9th | Nov 16th | Nov 23 (Thanksgiving) | Nov 30 |
| Brainstorm | OOOOOOO |  |  |  |
| Data Collection (50 photos)   * Name * Brands * Shoe Name | OOOOOOO | OOO |  |  |
| Midterm | OOOOOOO | OOOOOOO |  |  |
| Detection |  | OOOOOOO | OOOOOOO |  |
| Segmentation |  | OOOOOOO | OOOOOOO |  |
| Stitching |  | OOOOOOO | OOOOOOO |  |
| Finish Pipeline |  |  |  | OOOO |
| Video |  |  |  | OOO |
| Report (4 pages) |  |  |  | OO |

# Choose lead role for each section

Label (Left, Right, Front, Back, Top, Bottom)

Detection (1 person):

* Mu-Ti Chung (New Balance)

Segmentation (1 person):

* Shuoqi Wang (nike)

Stitching (2 people):

* Junhwan Kim (~~Puma~~ → User photos)
* Nam Gyu Kil (adidas)

Prospecs, Reebok, (Vans, converse)

Google image search keywords:

shoes model full body

shoes model

shoes profile

fully body, shoes

Sample user’s input?



