Human Height Estimation

ML Presentation - Group 1

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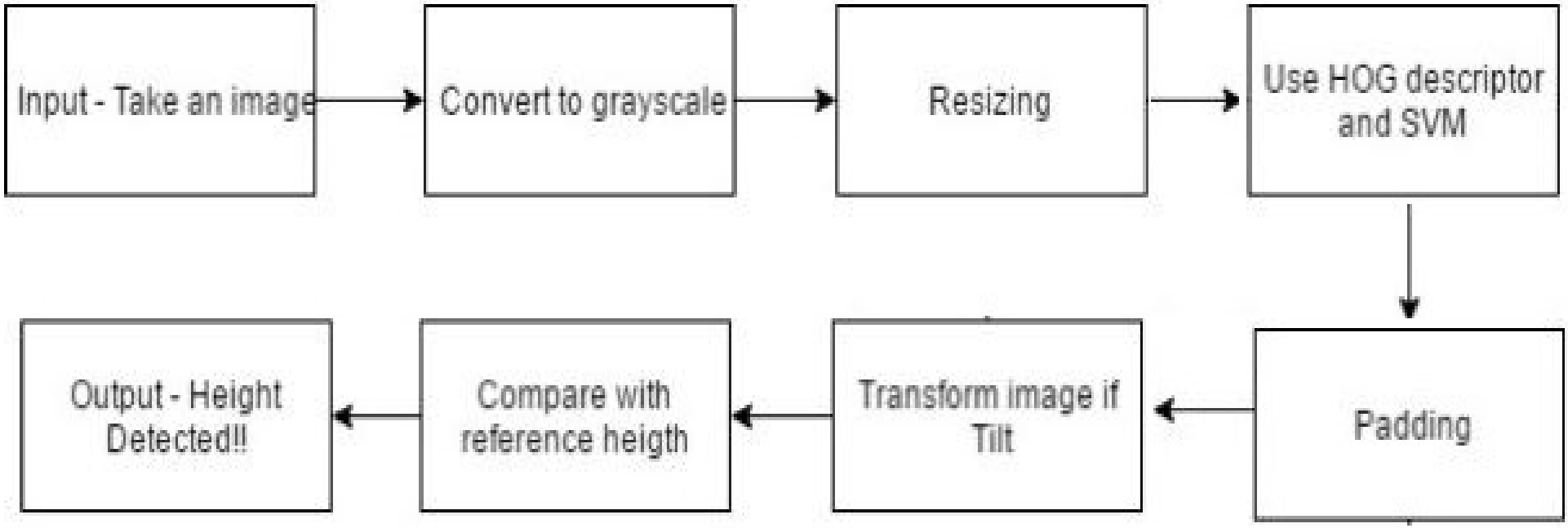
Introduction

- We have devised a method to estimate human height in video surveillance with cameras installed in high positions at a slightly tilted angle.
- Human height estimation can play a vital role in the field of security which deals with soft bio-metric features of person.
- Nowadays soft bio-metrics are becoming key area in field of security which help in predicting various feature of a person like weight , height , skin tone , nationality etc.
- The proposed method doesn't require any special calibration methods.
- The mathematical model that we have proposed is based on visual perception.

Basic Model



Formulas

- $P\_left = P\_ref - \frac{y + h - pad\_h}{\cos\theta} + x$
- $h = \frac{h}{\cos\theta}$
- $Height = \frac{h - (2 \times pad\_h) \times H\_ref}{P\_ref - (2 \times P\_left)}$

Challenges and Future Work

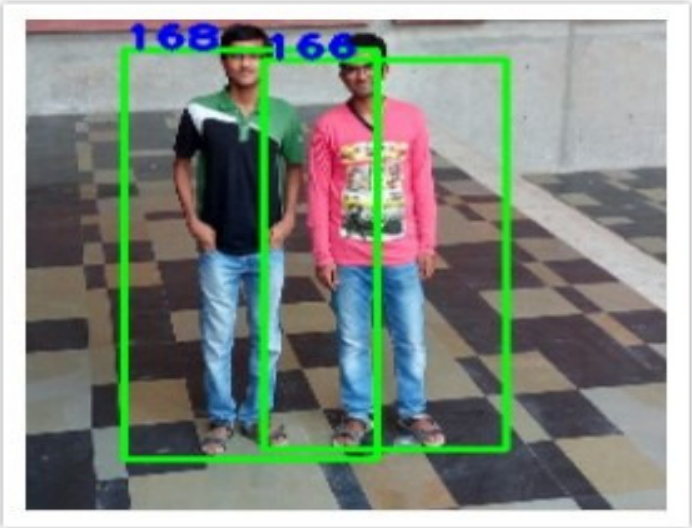
Challenges

- Surface of Ground
  There will be substantial error while estimating height when the floor is shining, floor is not flat or when the ground surface is not at the same level
- Walking habit of human.
  All humans have different walking habits, some walk with bowed head, some with forward leaning pose, such cases provide error in detection which will cause substantial error in result.

Future Work

- Accuracy
  The target is to minimize the absolute error and achieve accuracy.
- Low Resolution
  To design it in such a way that it can detect a person having low resolution and distorted image.
- Night Vision
  Detect people at night and also those people wearing clothes which blends with the background.

Results - True Detection



Results - False Detection