

# **Right Moment**

## **Progress Report**

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### **Introduction**

The objective of this project is to write the algorithm that will go back and forth between different frames of a sequence of images to offer the user the most “successful” one. Each frame will be evaluated by established criteria and will be given a unique rating after that the image with the highest rating will be offered to the user.

### **Progress**

Firstly, the process was started from preparing a series of images for tests. They were chosen to have as different parameters as possible in order to have an idea on how the algorithm depends on several factors. When the sufficient amount of images was found we moved to the building of a code for testing the features, by which the video frames will be evaluated.

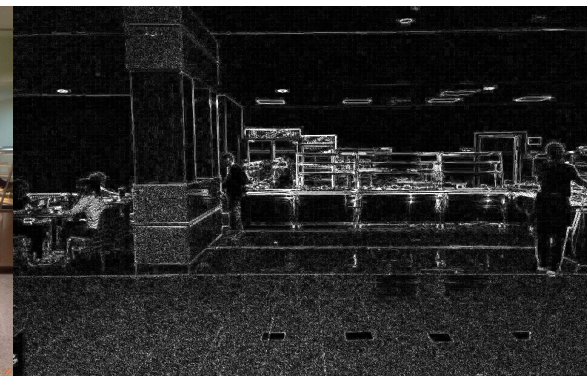
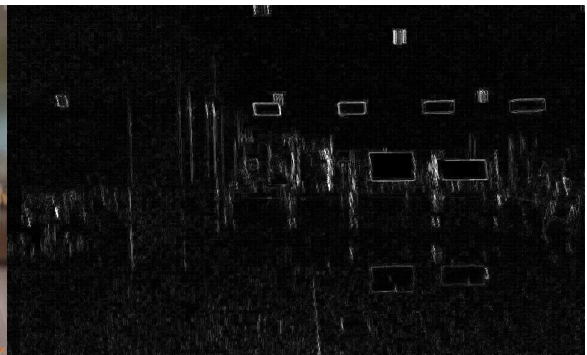
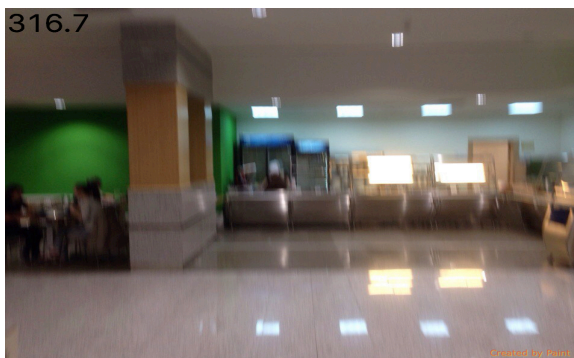
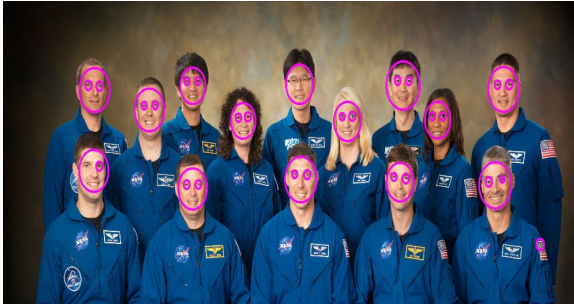
As it was mentioned in literature review, most of criteria for creation the image rating, are based on operation with the face region. Thus, the first feature to be found was the face.

OpenCV includes the variety of written functions and HaarCascades for face features detection. For better performance there was increased the difference between pixel values(equalized the histogram). Further, for face and eyes detection *detectMultiscale()* was implemented. The default function uses the method of Viola Jones, that shows a high performance in face detection, but frequently fails in finding the eyes and smiles. During the tests we came up with optimal parameters for eyes detection, however even at these case it often misses about 30% of eyes. Thus, the parameters for reliability and max object sizes were adjusted such that due to the smaller reliability the code works faster and ignores large objects, which are definitely not eyes. For making the image rating it was enough if at least one eye is detected in a boundaries of a unique face region, such that it would be checked that the eyes of a person are found and open.

Regarding the blurring, there was used the Laplacian function and after that taken the square of standard

deviation. The result was the variance that indicates blurring level. Only

images with the highest values will be considered, about 40%.



## Further Work

For the current moment we are facing the problem of a proper eye and mouth detection. Consequently, new methods should be considered. The one possible solution is smile detection using multi-scale Gaussian derivatives and principle component analysis for eyes. Furthermore, we decided to give different priorities to features but not implemented it yet. Thus, for blurring detection feature,

no blurred images will be considered at all and photos with all eyes open will be at higher priority than ones with smile.