# Age and Gender Classification using Convolutional Neural Networks

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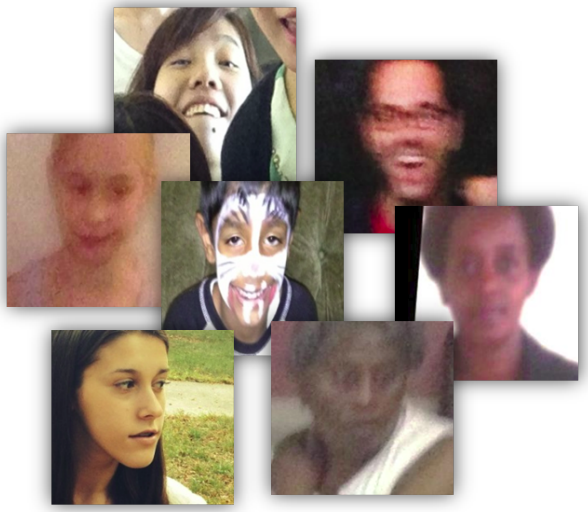

**Figure 1.** Faces from the Adience benchmark for age and gender classification. These images represent some of the challenges of age and gender estimation from real-world, unconstrained images. Most notably, extreme blur (low-resolution), occlusions, out-of-plane pose variations, expressions and more..

**Abstract:** Automatic age and gender classification has become relevant to an increasing amount of applications, particularly since the rise of social platforms and social media. Nevertheless, performance of existing methods on real-world images is still significantly lacking, especially when compared to the tremendous leaps in performance recently reported for the related task of face recognition. In this paper we show that by learning representations through the use of deep-convolutional neural networks (CNN), a significant increase in performance can be obtained on these tasks. To this end, we propose a simple convolutional net architecture that can be used even when the amount of learning data is limited. We evaluate our method on

the recent Adience benchmark for age and gender estimation and show it to dramatically outperform current state-of-the-art methods..

**Reference:** Gil Levi and Tal Hassner, *Age and Gender Classification using Convolutional Neural Networks*, IEEE Workshop on Analysis and Modeling of Faces and Gestures (AMFG), at the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), Boston, June 2015

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## Downloads

We provide the convolutional neural network models for age and gender classification used in the paper. If you find our code useful, please add suitable reference to our paper in your work. Downloads include:

- We now provide a git repository to help reproduce our results.
- Caffe model files and additional data in the zip file cnn_age_gender_models_and_data.0.0.2.zip (~86MB)
- Please see python notebook for example usage.
- A Gist page for our trained models, now appears in the BVLC/Caffe Model Zoo.
- A 3rd party Tensorflow reimplementation of our age and gender network. This was implemented by a 3rd party, Daniel Pressel

**What's new**
Nov. 21st, 2016:
A 3rd party Tensorflow port of our network by Daniel Pressel is now available on GitHub.

Oct. 30th, 2015:
Git repository added with sample code, meta-data files and instructions.

July 15th, 2015:
Update: To adjust the code snippet to newer versions of Caffe, a small modification of the io.py file is required. A modified version is available here. This update comes in response to issues reported by several people and covered also in the answer to the following Stack Overflow question.

May 5, 2015:
A few minor adjustments were made to the Caffe models in order to better support the new Caffe version. The previous version is still available from cnn_age_gender_models_and_data.0.0.1.zip



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Last update 21st of Nov., 2016