Karlsruher Institut für Technologie

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Master Thesis

Computer Vision for Human-Computer Interaction
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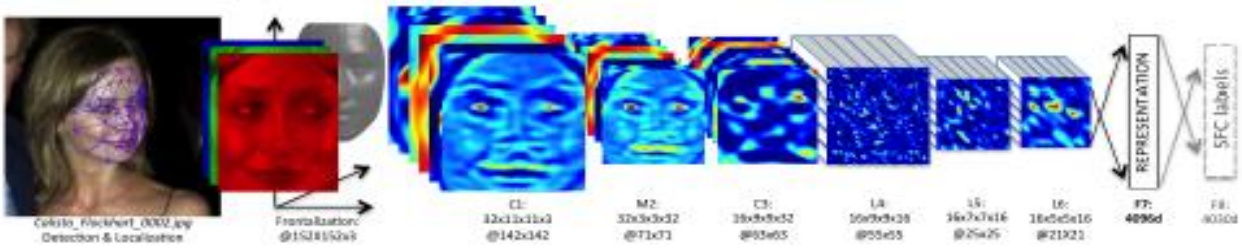
Face Recognition in the Wild with Deep Neural Networks



Face matching in the wild refers to real-world face recognition on the acquired images with unconstrained appearance variations, such as typically present in real image acquisitions e.g., view angle, lighting, noise, resolution differences, expressions and occlusions. Current recognition methods works quite well when tested under controlled conditions but performance degrades significantly under such difficult imaging conditions. Very recently, there has been a surge of interest in deep neural networks. In particular, deep and large networks have exhibited impressive results once they have been applied to large amounts of training data and scalable computation resources such as thousands of CPU cores and/or GPU's have become available. Most notably recently, Facebook showed excellent results, closing the gap to human performance on a challenging dataset, by employing a deep neural network with 120 million parameters trained on a very large facial dataset comprising four million facial images. The aim of such deep learning networks is to learn hierarchical feature representations by building high-level features from low-level ones. Contrary to high dimensional densely computed features directly on the image, such deep networks automatically learns the relevant features through extensive training with large training data and many layers of the network. Besides learning the relevant features i.e. representation, such deep nets have also been employed in the learning the similarity functions (metric learning) on precompiled features showing impressive performance improvement in matching face images in the wild. This emerging interest of the community in deep nets, while justified with the performance indicators, still has to meet many challenges pertaining to the intrinsic requirements of big data (millions of training examples) and tweaking large parameters.

This thesis will implement and research such deep neural network for face matching in the wild. It will provide an exciting opportunity to learn and apply this newly emerging area of research on real-world problems.

For more information and details please contact:

The thesis will be supervised at CV-HCI Lab KIT. Please contact Dr. Saquib Sarfraz (saquib.sarfraz@kit.edu).