Saliency in Crowd

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Introduction

Motivation

1. Models and theories to predict saliency focused on regular-density scenes.
2. What drives attention in a crowded scene can be significantly different from the conclusions from the regular setting.
3. How the crowd density influences the selection of attention is unclear.

Contributions

1. Features (on faces) are identified and analyzed in the context of saliency in crowd.
2. A new framework for saliency prediction is proposed which takes into account crowding information and is able to adapt to crowd levels. Multiple kernel learning (MKL) is employed as a core computational method for feature integration.
3. A new eye tracking dataset is built for crowd estimation and saliency in crowd computation.

Dataset

EyeCrowd database. Eye fixations in **Crowd** database.

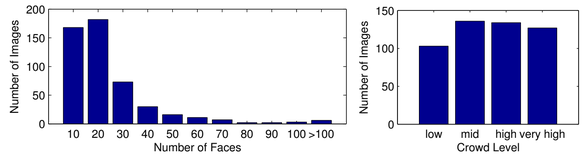
Stimuli: 500 natural scenes at various crowd levels.

Subjects: 16 students from NUS (10 males and 6 females, 20 – 30).
Procedure: Free-viewing for 5 seconds.
Labels and annotations:

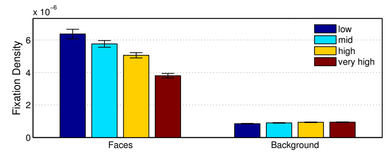
- Human faces were manually labeled with rectangles.
- Two attributes were annotated on each face: *pose* and *partial occlusion*.

Statistics

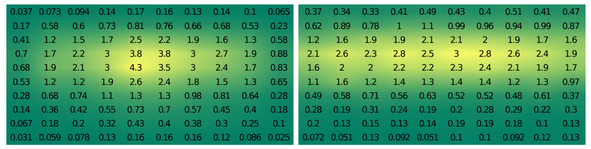
- **Distributions of face numbers and crowd levels.**



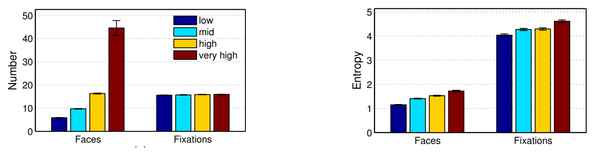
- **Faces attract attention strongly, across all crowd levels.**



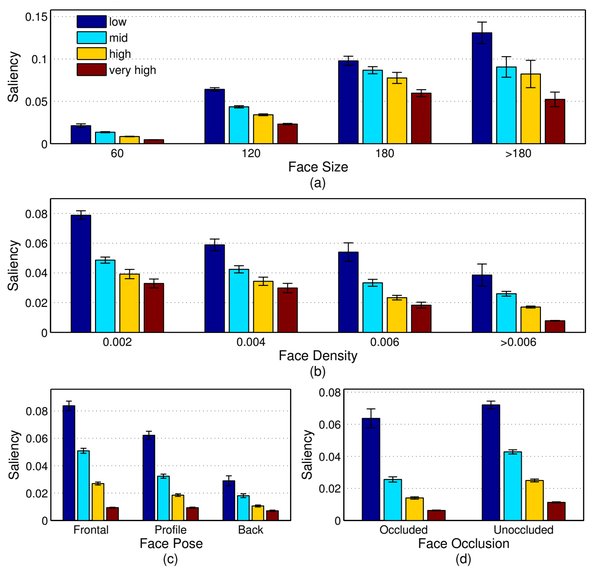
- **Spatial distributions of (a) fixations and (b) faces.**



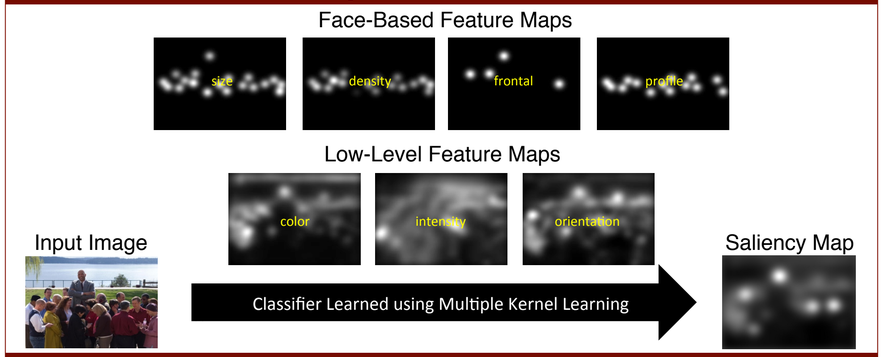
- **Fixation numbers do not increase with the crowd level, while the fixation entropies do.**



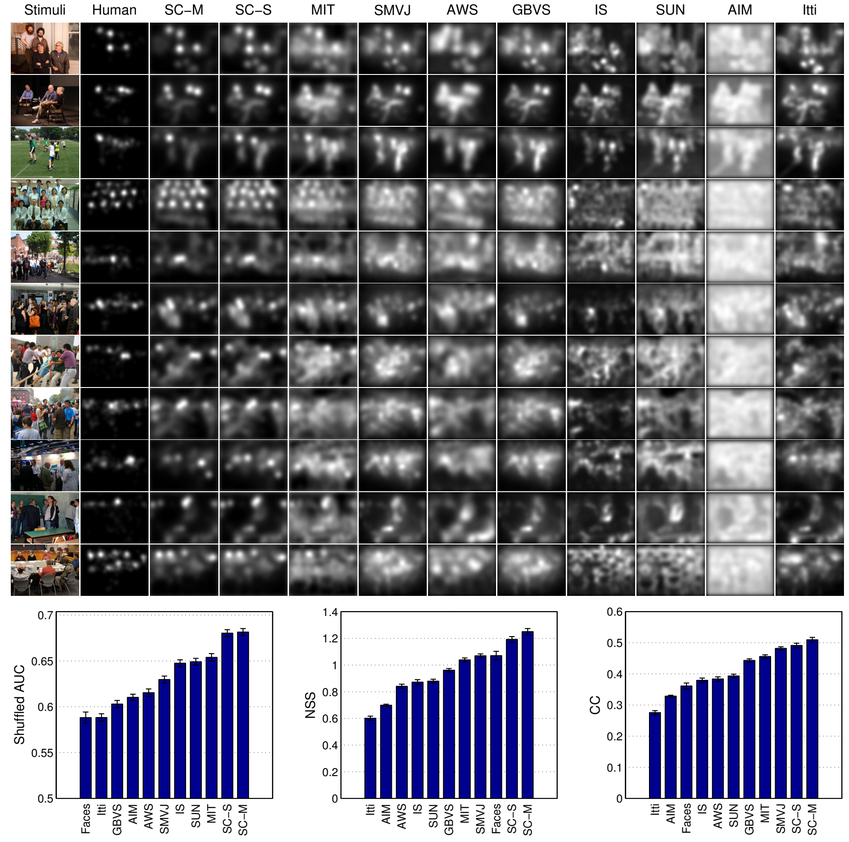
- **Crowd density modulates the correlation of saliency and features.**



Computational Model



Results



Resources

Project Page:
http://goo.gl/fiaRO3

Data and Code:
http://git.io/rETfLQ