# ICCV2019

We review ICCV2019 paper in crowd counting

## Perspective-Guided Convolution Networks for Crowd Counting (PGC)

Solve the problem: **Dramatic intra-scene scale variations of people due to the perspective effect.**

PGC use perspective information

Normalize perspective map, alpha and beta is trainable parameter

$$\widetilde{\mathbf{p}} = \zeta(\mathbf{p}) = \frac{1}{1+e^{-\alpha(\mathbf{p}-\beta)}}$$

Blur map, alpha and p_0 is trainable

$$\boldsymbol{\sigma} = \max\left(a\left(\widetilde{\mathbf{p}} - p_0\right), 0\right)$$

Gaussian kernel

$$G_{\sigma_{i,j}}(i,j,k,l) = \frac{1}{\sqrt{2\pi}\sigma_{i,j}}\exp\left(-\frac{\left((k-i)^2+(l-j)^2\right)}{2\sigma_{i,j}^2}\right)$$

And so, Smoothing result x at (i, j)

$$\tilde{x}_{i,j} = \sum_k \sum_l x_{k,l} G_{\sigma_{i,j}}(i,j,k,l)$$