LOCAL SILHOUETTE RECTIFICATION FOR POST-PROCESSING ANTIALIASING

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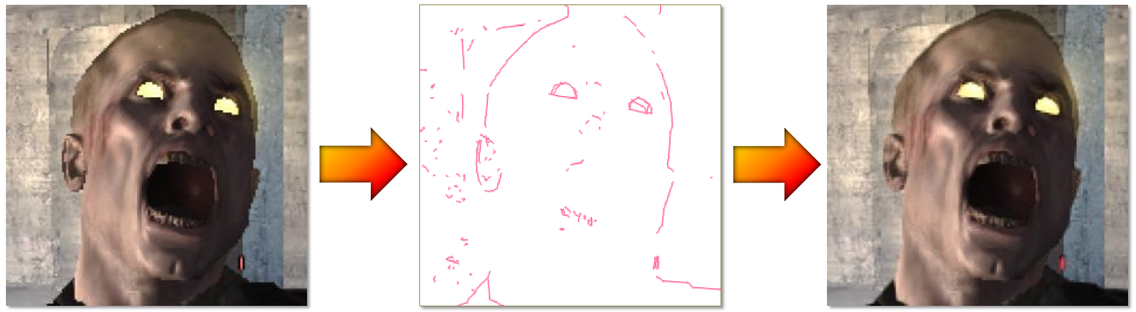
Problem : silhouette detection using pixel colors
Usage : post-processing antialiasing
Requirements : fast (and local)



Possible approaches:

- Fattal, R. Image Upsampling via Imposed Edge Statistics, Siggraph'07
- Kopf, J. and Lischinski, D. 2011. Depixelizing Pixel Art. Siggraph'11
  - these methods achieve the best quality but rather slow.
- Silhouettes @ half-edges (Jimenez's MLAA)
  - fastest approach but quality may suffer.

Example: half-edges (**top**) vs LSR (**bottom**)
one triangle edge is shown;
blue lines separates pixels of different color

Idea: use the lengths of the connected linear segments to compute interception points (**y** values)

LSR conjecture: optimal local y has a form (q is a constant)

$$\mathbf{y}(\ell_c, \ell_o) = 1/2 + q\,(\ell_c - \ell_o) / (\ell_c + \ell_o)$$

Finding the best value of q: minimize

$$r = \frac{\text{error for } \mathbf{y}(\ell_c, \ell_o)}{\text{error for } \mathbf{y}_{1/2}}$$

for all possible straight lines