

Patch-Based Image Vectorization with Automatic Curvilinear Feature Alignment

Supplemental Materials

Tian Xia

Binbin Liao

Yizhou Yu

University of Illinois at Urbana-Champaign



Figure 1: First row: original image and vectorization result ($\times 1$). Second row: magnification ($\times 4$).



Figure 2: First row: original image and vectorization result ($\times 1$). Second row: magnification ($\times 4$).

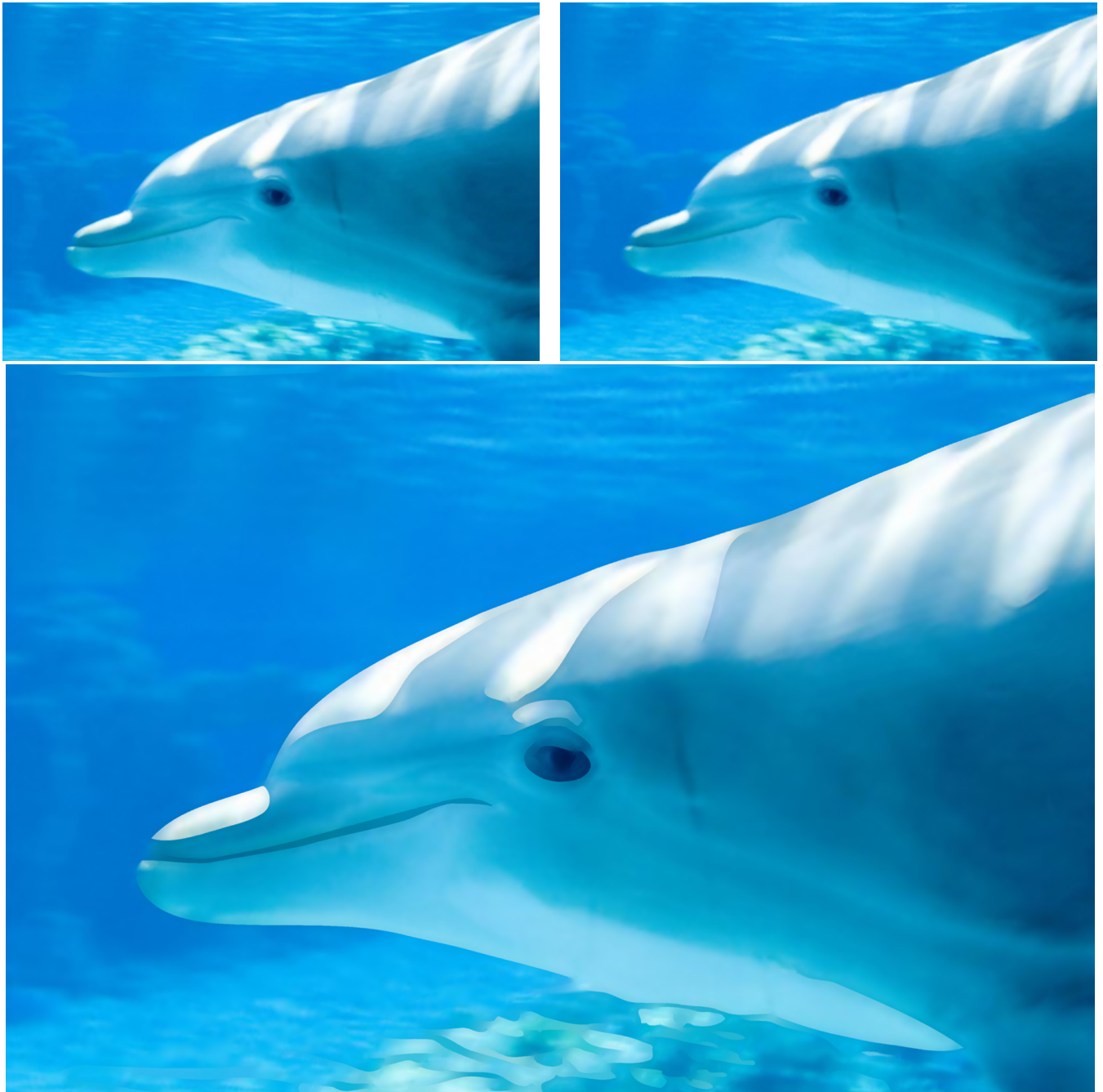


Figure 3: First row: original image and vectorization result ($\times 1$). Second row: magnification ($\times 4$).



Figure 4: First row: original image and vectorization result ($\times 1$). Second row: magnification ($\times 4$).



Figure 5: *Left column: original images. Right column: vectorization results ($\times 1$).*



Figure 6: Left column: original images. Right column: vectorization results ($\times 1$).

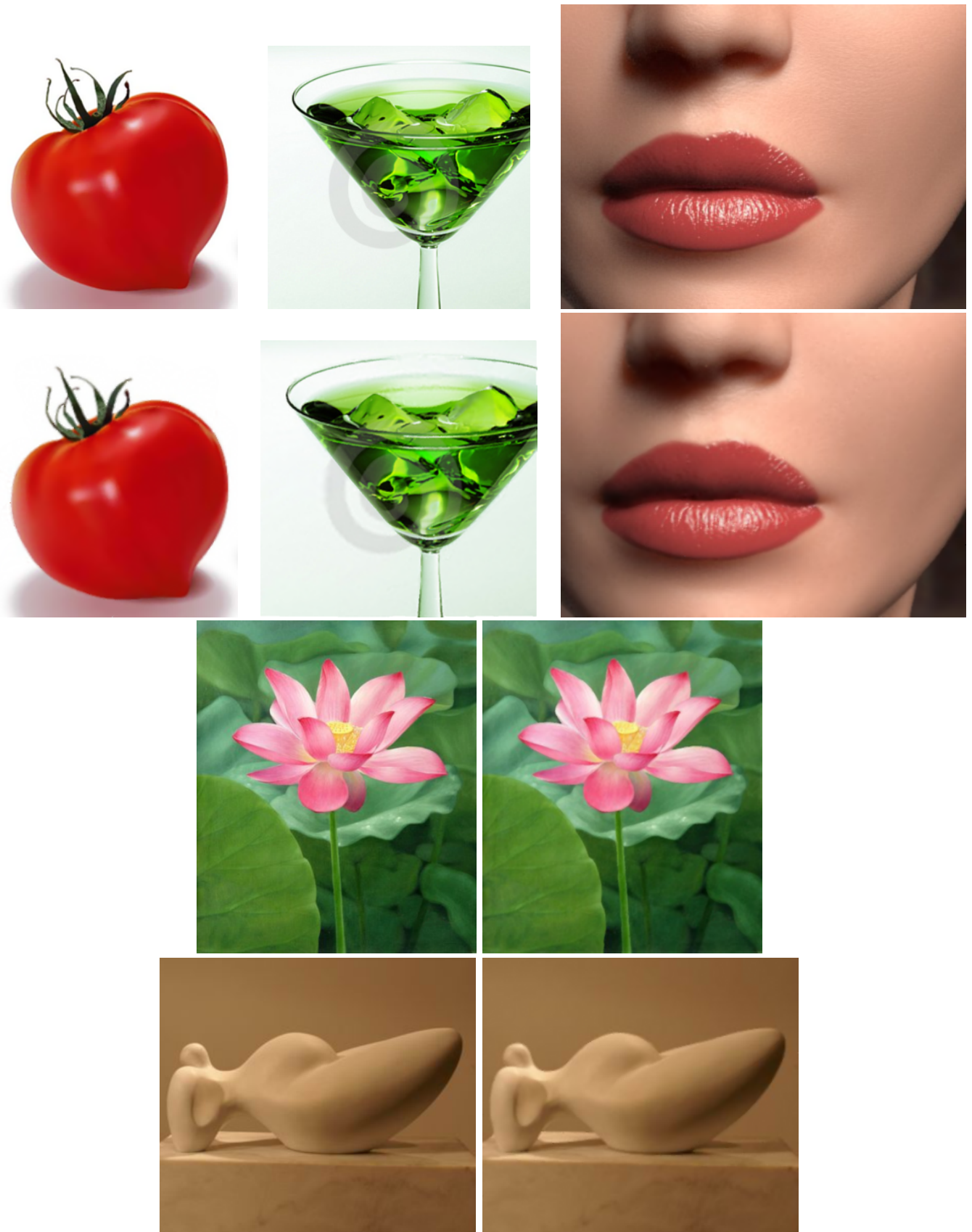


Figure 7: First row: original images. Second row: vectorization results. Third and fourth rows: original images (left) and vectorization results ($\times 1$, right).

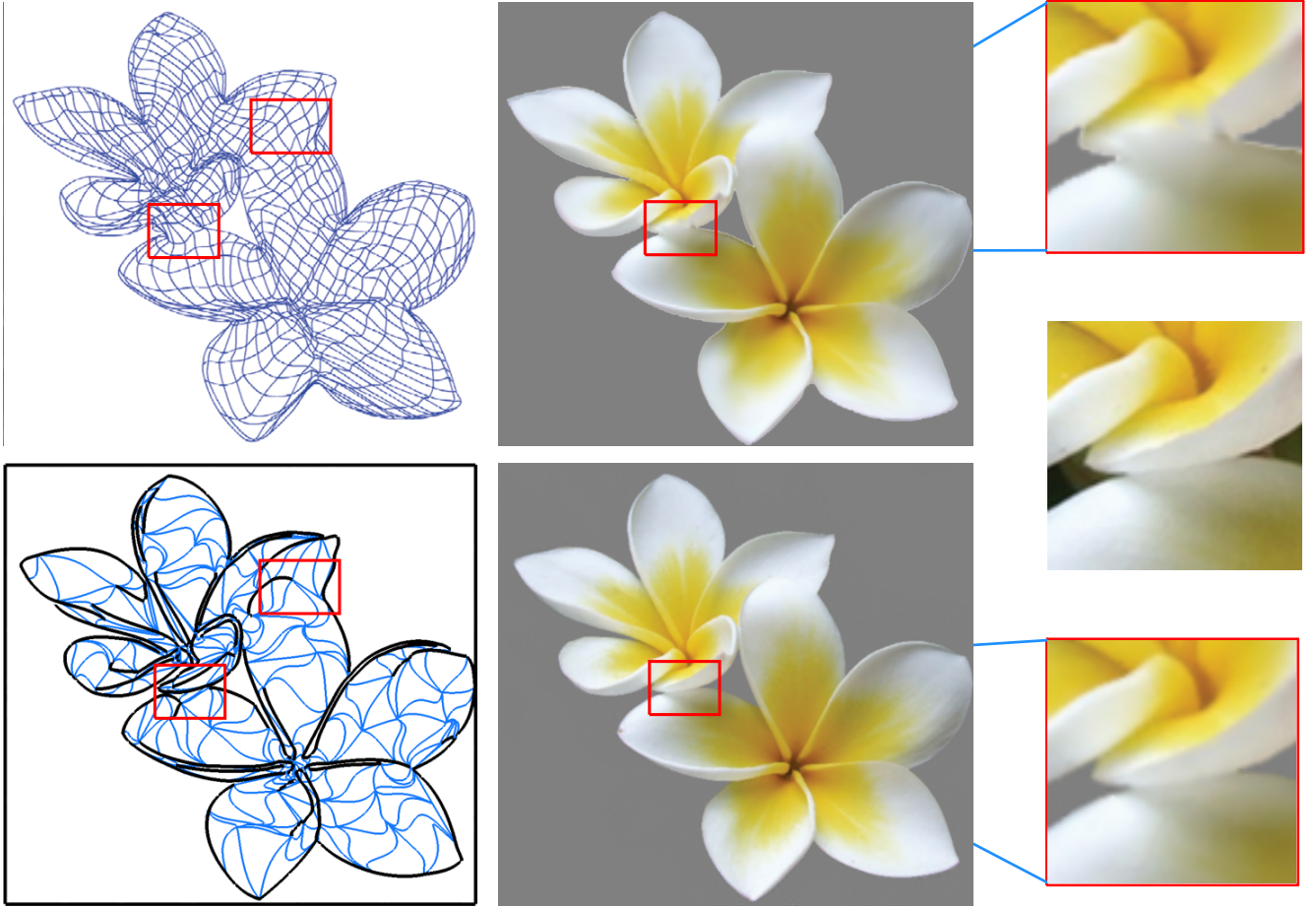


Figure 8: First column top: mesh used by [Lai et al. 2009] with more than 1000 patches. First column bottom: our mesh with 380 patches. Second column top: In regions indicated by the red box, artifacts are induced using the technique in [Lai et al. 2009]. Second column bottom: Our result with a mean reconstruction error 0.98/pixel. Third column top: Close-up of the problematic region. The undesired blur is due to the fact that [Lai et al. 2009] does not align their mesh with features within the foreground layer. Third column middle: The original image. Third column bottom: Our reconstruction. It preserves the feature line between the two petals, and is more faithful to the groundtruth image.

Following [Sun et al. 2007], [Lai et al. 2009] uses Ferguson patches in their gradient mesh representation. Each corner of the patch stores the 2D position and color information. Two partial derivatives with respect to mesh parameters u and v are also needed for each aforementioned component. Each corner therefore needs 15 scalar coefficients. The petal example uses $30 \times 55 = 1650$ patches, i.e. 1736 corners, summing up to 26.04K degrees of freedom in total. Ours uses a comparable number of total coefficients ($380 \times 66 + 102 = 25.18K$) and achieves a better result in terms of both visual appearance and mean reconstruction error.