Conjoining Gestalt Rules for Abstraction of Architectural Drawings
Supplemental Material

Liangliang Nan[1]   Andrei Sharf[2]   Ke Xie[1]   Tien-Tsin Wong[3]   Oliver Deussen[4]   Daniel Cohen-Or[5]   Baoquan Chen[1]

[1] SIAT   [2] Ben Gurion Univ.   [3] CUHK   [4] Konstanz Univ.   [5] Tel Aviv Univ.

Figure 1: *Clean rendering of Figure 6 in the paper. The main door elements are grouped by vertical regularity gestalts which are eventually simplified by two embracing vertical columns. Similar behavior occurs for windows' elements in horizontal direction.*
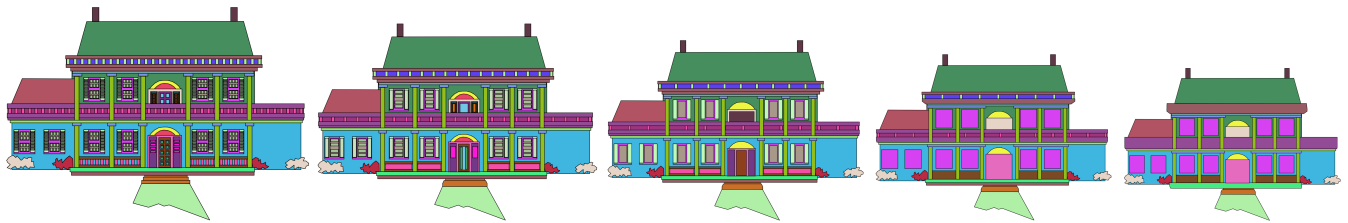

Figure 2: *Color-coded abstraction sequence of Figure 1. We color elements belonging to the same gestalt grouping by a unique color for visualization purposes of our computation.*

Figure 3: *Clean rendering of Figure 14 in the paper (from left to right, top to bottom row). Four out of six small elements in the original inner window (upper part) are replaced by an embracing square. The remaining two elements are removed using the level of detail threshold t_{LOD}. The horizontal regular pattern below the central dome is grouped by regularity and simplified by summarization.*
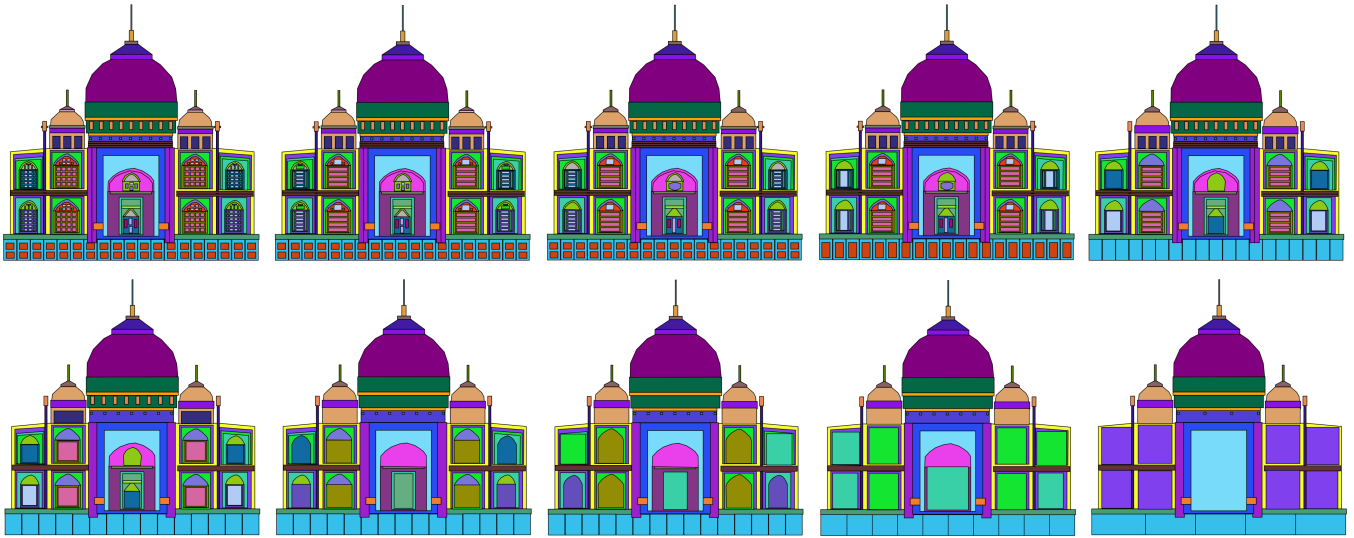
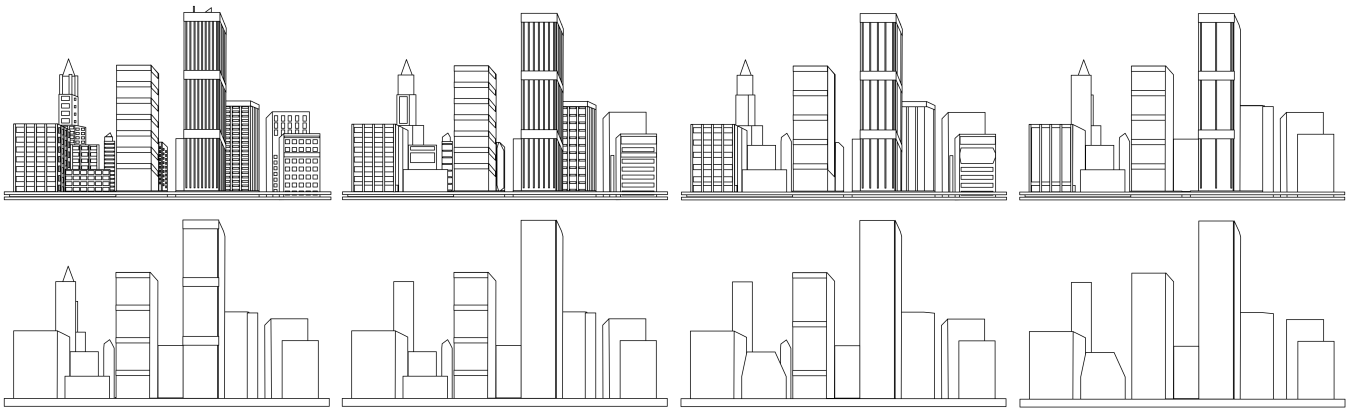Figure 4: *Color-coded abstraction sequence of Figure 3 .*

Figure 5: *Clean rendering of Figure 1 in the paper (from left to right, top to bottom row).*

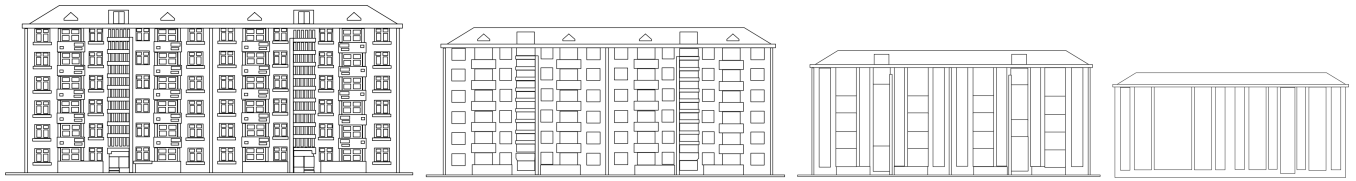Figure 6: *Color-coded abstraction sequence of Figure 5 .*

Figure 7: *Abstraction result of a complex building containing detailed geometry. Observe the dominant vertical patterns which are successfully detected and abstracted by our method.*

Figure 8: *Abstraction result of a building containing dominant horizontal patterns. Hence, horizontal gestalts are stronger and our method successfully detects them and simplifies accordingly.*

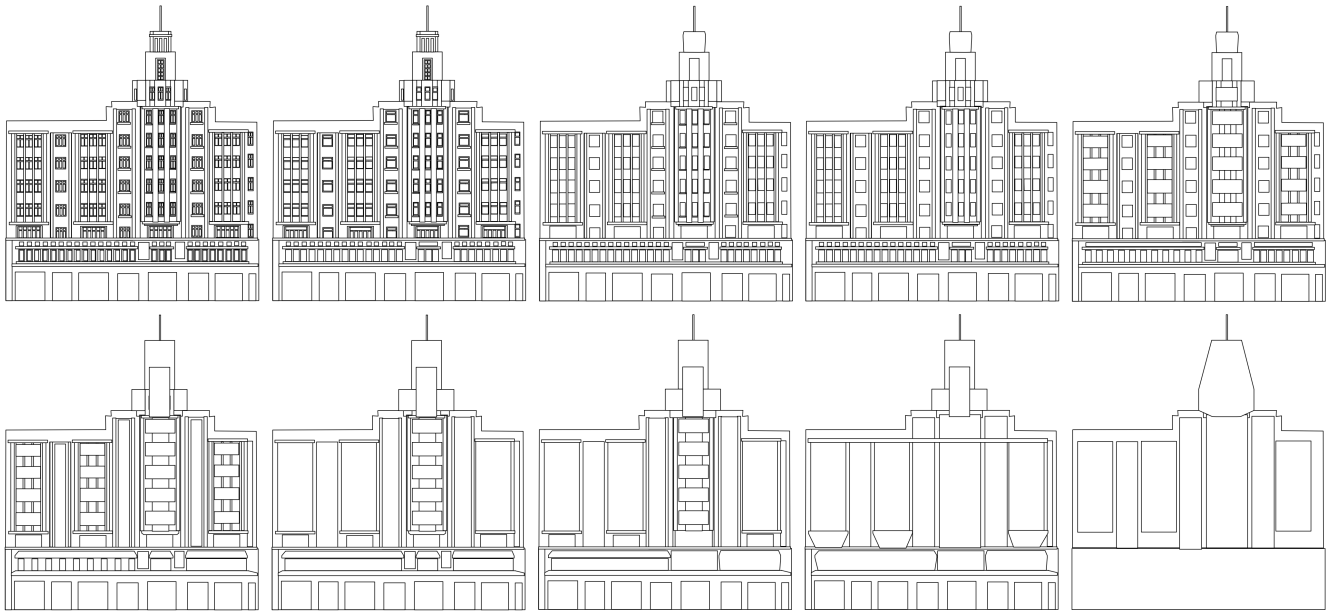**Figure 9**: *Six simplification iterations of a complex building (from left to right, top to bottom row).*

Figure 10: *Clean rendering of Figure 15 in the paper (from left to right, top to bottom row).*
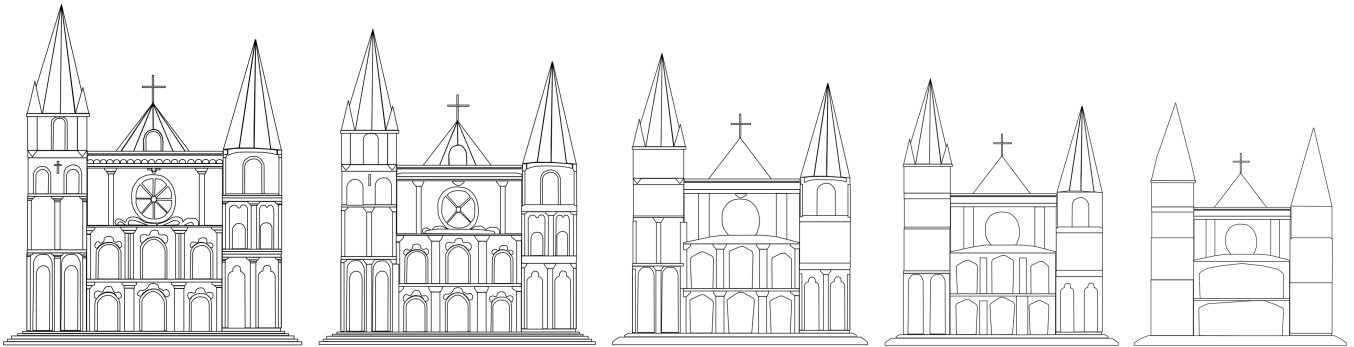

Figure 11: *Gestalt-based abstraction of a church vector drawing. The small cross on the left does not match to any gestalt. Still we remove it using the level of detail threshold t_{LOD} in Section 6. The horizontal bar and vertical bar are removed one after another respectively due to their screen size. The central Rozeta window with eight triangular sections is simplified by shape similarity gestalt. In a same manner, the four curved elements below the Rozeta are grouped together by similarity gestalt.*
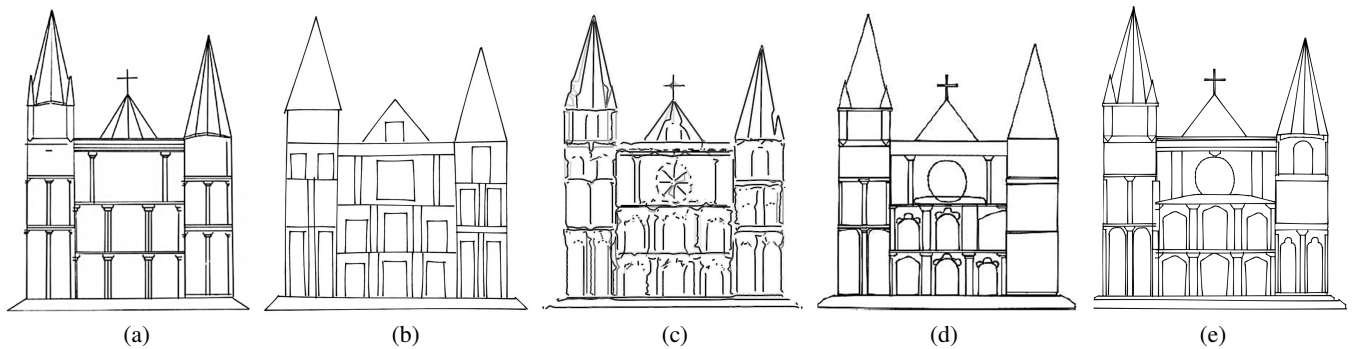

| (a) | (b) | (c) | (d) | (e) |

Figure 12: *Comparing abstraction of a church (see Figure 11). (a) shows a professional hand-drawn abstraction, (b) is a hand-drawn abstraction by an artist, (c) shows simplification using Shesh and Chen [2008], (d) is geometry simplification by proximity and (e) is our result. We compare between simplified drawings with roughly the same amount of geometric detail, measured as the total length of vectors/sum of pixels.*
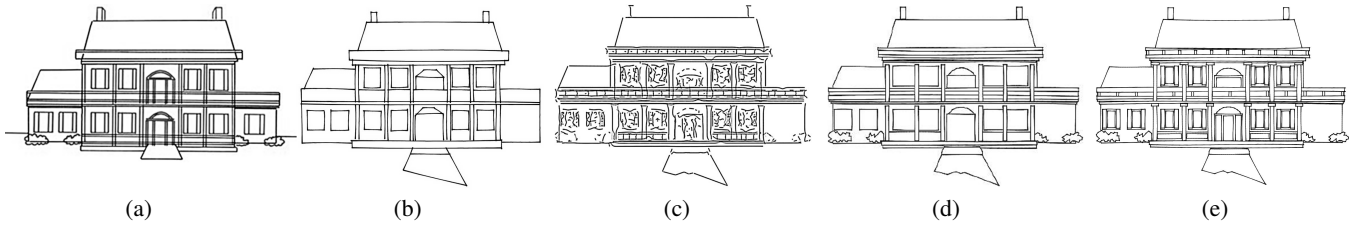
Figure 13: *Comparing abstraction of a farm-house (see Figure 1).(a) is a professional hand-drawn abstraction, (b) is an artist hand-drawn abstraction , (c) shows simplification of Shesh and Chen [2008], (d) is geometry simplification by proximity and (e) shows our result.*
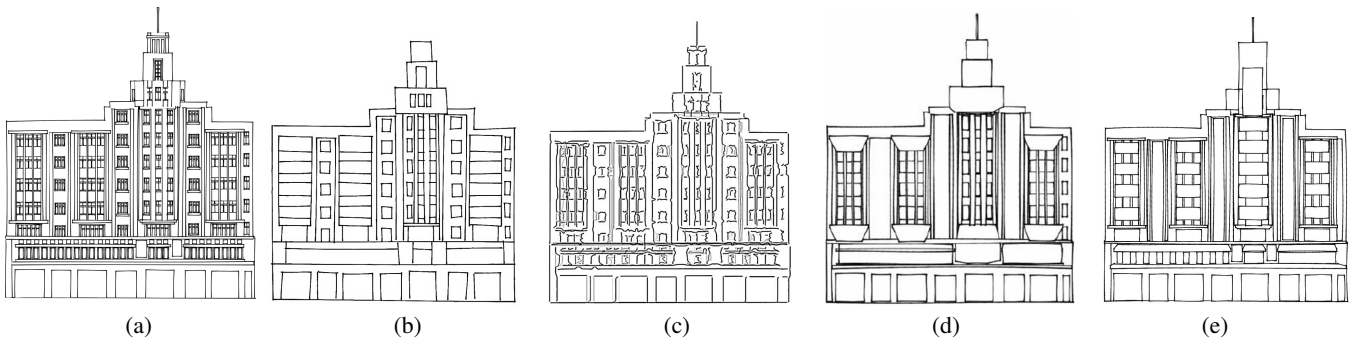

Figure 14: *Comparing abstraction of a tall building .(a) is the original model, in (b) the hand-drawn abstraction by artist, (c) shows simplification of Shesh and Chen [2008], (d) is geometry simplification by proximity and (e) shows our result.*

Figure 15: *Gestalt abstraction of a flower mosaic. Continuity/closure gestalts play a dominant role as polylines are merged and averaged throughout our simplification iterations.*