Automatically Adding Seam Allowance to Cloth Pattern

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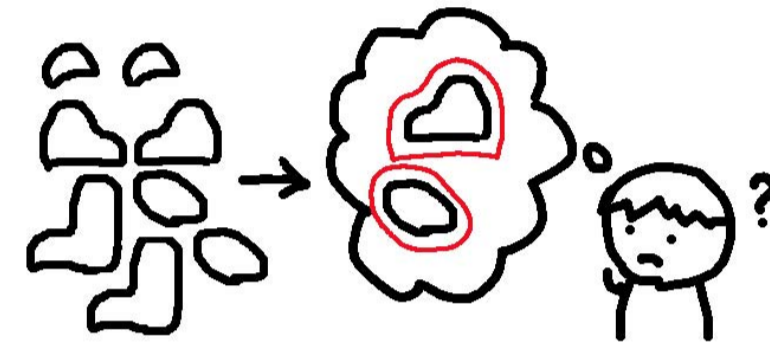Hiromasa Suzuki
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Problem

To sew a real fabric, one also needs to leave an appropriate seam allowance when cutting the two-dimensional (2D) pattern. Traditional computational pattern generation methods did not automatically generate seam allowance mainly.
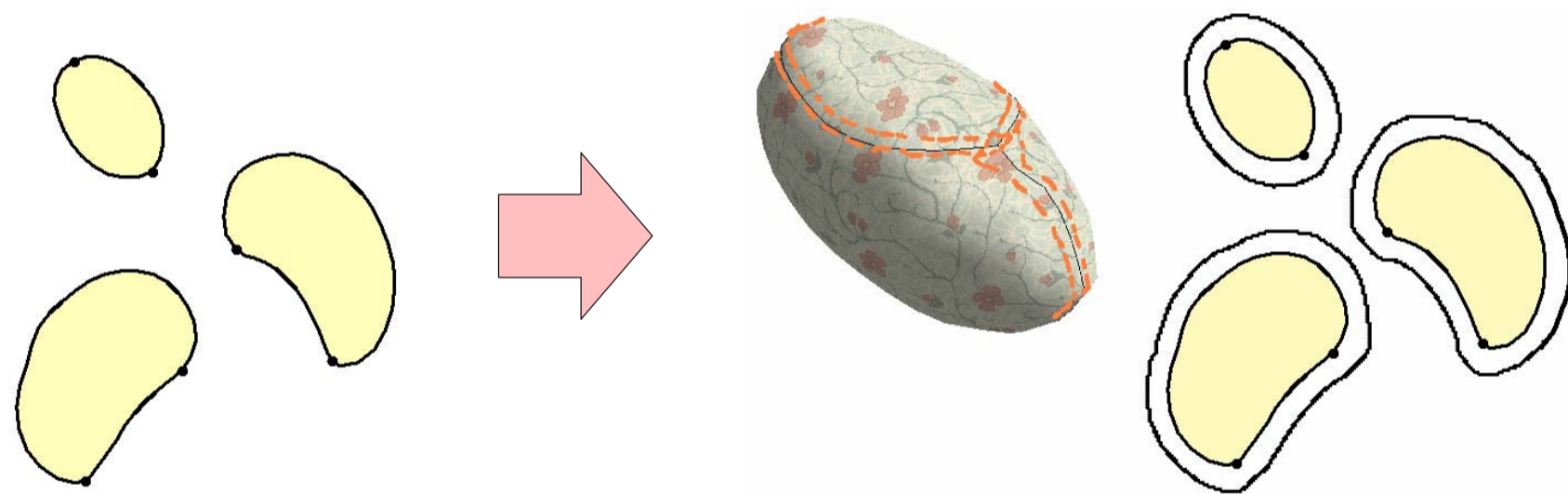

[Igarashi and Hughes 02]   [Mori and Igarashi 07]

Contribution

Our system automatically generates seam allowance.

Algorithm

Naïve approach is to generate seam allowance of equal width around the pattern. However, it can cause problems in actual sewing as shown in Figure 1 left. To obtain a professional looking result, our system generates to consider the geometry of cloth pattern after folding at the seam lines Figure 1 right.
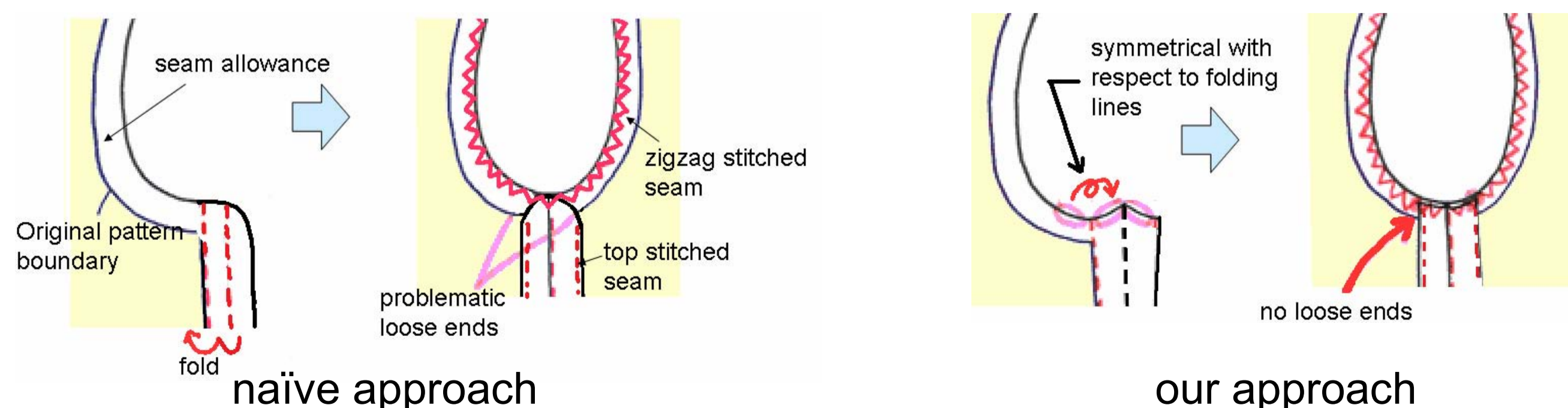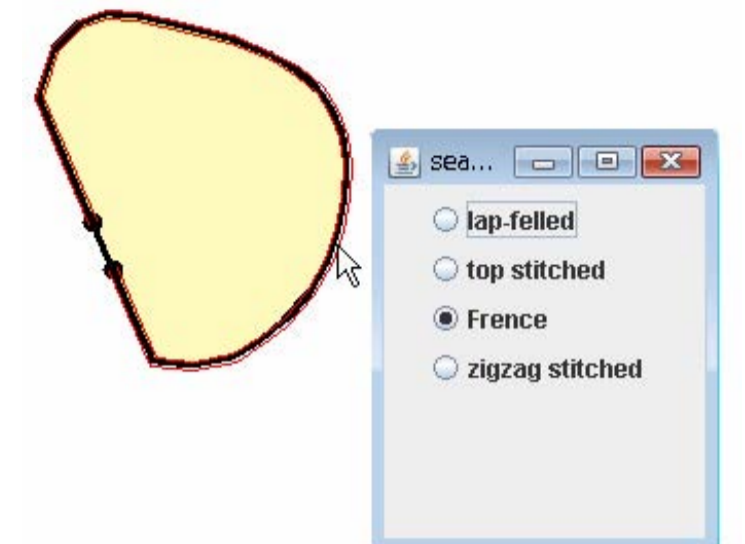

naïve approach   our approach

Figure 1: An Example of problematic cases (sleeve placket).

Implementation

Our system supports four seam types as shown in Table 1. To compute the shape of seam allowance, the system first computes a distance field around the cloth pattern and then traces its iso-contour of the field.

Special treatment is applied at the corner of the cloth pattern where curved seam and straight seam meets.
In this case, straight seam is folded first and then curve seam is finished by zigzag stitches (this is because it is typically difficult to fold curved seams). For each such a corner, the system sets the boundary shape of the seam allowance along the curved seams (zigzag stitch) so that that it exactly matches after folding at the straight seams (Figure 1).

Table 1: types of seam allowance.

types of seam allowance	illustration	seam allowance on a 3D model	seam allowance on a 2D pattern	real fabric
lap-felled seam				
top stitched seam				
French seam				
zigzag stitched seam				

References

Igarashi, T. and Hughes, J. F. "Clothing manipulation," In Proc. of 15th Annual Symposium on User Interface Software and Technology (ACM UIST 2002), 91-100, 2002.
Mori, Y. and Igarashi, T. "Plushie: An Interactive Design System for Plush Toys," ACM Transactions on Computer Graphics (Proceedings of SIGGRAPH 2007), vol.23, No.3, Article No.45, 2007

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