

ARTICLE

From Greek dowry to modern fashion: Transforming textile heritage through designer–artificial intelligence collaboration

Supplementary Files
Table S1. Attempts A1–A9

Attempt	Flow	Mode	Prompt set(s)	Category (faithfulness–deviation)	Implemented	Key observation (1–2 lines)
A1	I2I/T2I	Preservation (high-fidelity preview)	A1	Faithful variation (high-fidelity; near-duplicate risk)	Yes	Strong inset placement as a faithful pre-visualization. AI still normalized details (ajour, spacing and fringe intensity)
A2a	I2I/T2I variants	Preservation	A2	Styling-driven / scale drift	No	Over-embellished all-over embroidery look. Ignores meterage constraints
A2b	I2I/T2I variants	Preservation	A2	Partly faithful but placement vague	No	Wearable direction, but motif legibility and constructive logic remain weak
A2c	I2I/T2I variants	Preservation	A2	Faithful variation (best of A2)	No	The collar is finally closer. Still lacks a clear structural placement strategy for limited heritage material
A3b	I2I/T2I variants	Preservation (very high)	A3	Very high faithfulness (near-duplicate risk)	No	Motif grammar transfers strongly. Feasibility/pattern mapping not resolved
A3c	I2I/T2I variants	Preservation and controlled refinement	A3	Faithful variation (still high-fidelity)	No	Better wearability read, but still needs explicit mapping to actual piece sizes and seam planning
A4	I2I/T2I	Reinterpretation (but drift)	A4	Conceptual reinterpretation with constructability gap	No	Looks like embroidery stitched onto a shirt rather than a refashioned insert with edges
A5	I2I/T2I	Reinterpretation	A5	Faithful variation (best refashion translation so far)	No	Strong bib/vest inset logic (heritage as a separate piece), but motif geometry and layering realism drift
A6a	Multimodal I2I/T2I	Controlled via sketch	A6	Faithful variation (controlled, high value)	No	Sketch input reduces drift. Best placement discipline and symmetry control
A6b	Multimodal I2I/T2I	Drift	A6	Off-style and materiality failure	No	Material misread (woven to knit), pattern incorrect. Functions as drift example
A6c	Multimodal I2I/T2I	Partial control	A6	Faithful variation (mixed)	No	Wearable concept, but motif becomes over-normalized (too strict and symmetrical vs. original curvature)
A7	I2I iterative edits	Preservation and constructive strategy	A7a–A7c	Faithful variation + material economy refashion logic	Yes	Valuable because it shows both near-duplicate tendency (“ <i>exact repetition</i> ”) and realistic reuse strategy (muslin back)
A8	T2I + iterative edits	Reinterpretation (technique-led)	A8a–A8d	Strong concept, moderate heritage specificity	No	Trapunto idea is strong (craft to construction), but length control and one-piece conversion are unstable. Border underused
A9	T2I brief-driven	Reinterpretation (brief precision)	A9a–A9d	Brief-driven concept with iteration instability	No	Excellent specification as protocol, but micro-corrections do not stabilize. Like trapunto legibility, inconsistent resets needed

1. Prompt set A1 (pants + sleeves)

1.1. Goal

Worn full-body editorial photo. Cream denim pants with heritage lace inset on the entire left leg, earthy beadwork on seams, optional fringe; paired with a cream blouse with balloon sleeves.

1.2. Prompt

“Create a realistic studio photo of a female model wearing high-waisted cream denim jeans and a cream blouse. Use the reference textile to create a lace/embroidered inset panel that runs from waistband to hem along the entire left leg of the jeans. Add subtle earthy-toned beadwork stitching along all denim seams (waistband, pockets, side seams, inseam). Keep the overall palette warm cream/beige and the styling minimal, editorial, high realism.”

1.3. Constraints

- (i) Full-length pants visible (waist to hem).
- (ii) Inset must be continuous on left leg (not scattered patches).
- (iii) Beads must be small, earthy (sand/caramel/olive-brown), placed on seams only.

1.4. Optional variation

“Add a narrow fringe trim at the hem and pocket edges, matching the textile fibers.”

1.5. Negative prompt

“no random floral prints, no unrelated lace patterns, no bright colors, no distorted hands, no extra limbs, no unrealistic denim texture.”

2. Prompt set A2 (white-on-white embroidered shirt + Korean collar)

2.1. Goal

White blouse that preserves subtle embroidery but remains readable; Korean/mandarin collar.

2.2. Prompt

“Generate a realistic photo of a woman wearing a white blouse made of linen/cotton. Integrate the reference white-on-white embroidered motif as tone-on-tone embroidery across the front panel and sleeves. The blouse has balloon sleeves down to the wrist with a narrow fitted cuff. Add a mandarin/Korean-style stand collar (no flat shirt collar). Soft neutral background, high realism.”

2.3. Constraints

- (i) Collar must be a stand collar (mandarin), not scalloped/Peter Pan.
- (ii) Embroidery must remain visible through controlled shadow/relief (avoid over-smoothing).
- (iii) Maintain minimal styling, no extra decorative motifs.

2.4. Negative prompt

“no scalloped collar, no lace bib, no added ribbons unless specified, no heavy contrast embroidery.”

3. Prompt set A3 (skirt from woven motif + identical fringe)

3.1. Prompt

“Create a realistic fashion photo of a model wearing a fitted mini skirt. Use the reference woven motif as the main skirt fabric with vertical panel alignment (preserve stripe rhythm and repeated medallions). Add a fringe hem that matches the reference fringe texture and twist. Pair the skirt with a simple light blouse from the existing series, neutral background, high realism.”

3.2. Constraints

- (i) Short and fitted silhouette.
- (ii) Fringe must closely match the source (twisted strands, similar density)
- (iii) Motif scale should remain consistent (avoid “AI resizing” that breaks rhythm).

3.3. Negative prompt

“no random geometric patterns, no different fringe style, no added prints.”

4. Prompt set A4 (central floral motif, placement-controlled)

4.1. Prompt

“Generate a realistic photo of a woman wearing a cream blouse with balloon sleeves and a mandarin (mao) collar. Place a single large embroidered floral vine motif copied from the reference along the center front, starting at the neckline and ending around the upper abdomen. Add a small matching motif band at the sleeve ends near the wrists. Do not add extra small motifs elsewhere. High realism, neutral studio background.”

4.2. Constraints

- (i) One central motif only (no scattered flowers).
- (ii) Start at neckline; end at abdomen.
- (iii) Cuffs: small motif near wrist only.

4.3. Negative prompt

“no extra motifs on shoulders/upper sleeves, no fringe hem unless specified, no random bouquet reinterpretation.”

5. Prompt set A5 (integrated vest inset on white shirt)

5.1. Prompt

“Create a realistic photo of a woman wearing a white blouse. Integrate two mirrored panels from the reference embroidered textile as an inset bib/vest shape on top of the blouse (like an integrated gilet, not a separate garment). The inset should frame the upper torso symmetrically and keep the scalloped edge visible as a design border. Maintain clean tailoring and high realism.”

5.2. Constraints

- (i) Two mirrored insets (left/right), symmetrical.
- (ii) Scalloped edge remains visible and clean (acts as border).
- (iii) Inset looks sewn-in, not floating or printed.

5.3. Negative prompt

“no separate vest garment, no random lace, no asymmetry unless specified.”

6. Prompt set A6 (blue flower motif vest + sweater reconstruction)

6.1. Prompt A (vest)

“Generate a realistic photo of a woman wearing a cream blouse with balloon sleeves and a sleeveless vest made from the reference motif (blue flowers and green border). The vest has a large statement collar inspired by a Korean-style oversized collar, with green edging following the border logic. High realism, neutral background.”

6.2. Prompt B (sweater build-up from yoke reference)

“Using the reference yoke layout, generate a realistic knitted sweater where the motif forms a yoke/upper-chest panel. Preserve the blue flower placement and the green border as trim. Add the missing sweater body with coherent knit texture, realistic fit, and clean finishing details.”

6.3. Negative prompt:

“no unrelated floral patterns, no neon blues/greens, no plastic texture, no distorted knit.”

7. Prompt set A7a (complete + replicate exactly)

7.1. Goal

Complete the half-finished heritage shirt into a fully wearable garment, preserving the existing half exactly and replicating the motif repeat; present as an editorial studio photo on a model.

7.2. Prompt

“Using the reference photo of the half-finished embroidered shirt on the mannequin, complete the garment into a full shirt without changing anything on the existing half. Replicate the exact same motif repeat and cutwork/embroidery on the missing half so the final garment looks symmetrical and consistent. Construct it as a classic shirt with long sleeves and cuffs, a thin/narrow collar, a standard shirt front with a hidden button placket, and keep the scalloped/wavy hem finish visible in the reference. Photograph the finished shirt worn by a beautiful Asian model in a bright studio with a window and a plant, high-end editorial/Vogue aesthetic, realistic fabric and stitching.”

7.3. Constraints

- (i) Do not alter the original half at all; mirror/continue it faithfully.
- (ii) Keep the scalloped/wavy edge treatment consistent with the reference hem/finishes.
- (iii) Hidden buttons (clean front), thin collar, realistic shirt construction.

7.4. Negative prompt (example)

“no new lace motifs, no added decorations, no pattern scaling, no random embroidery, no color changes, no distorted cutwork holes, no extra seams that break the motif, no extra limbs/hands.”

8. Prompt set A7b (sleeveless + scalloped armhole + scalloped placket)

8.1. Goal

Turn the same shirt into a sleeveless version, preserving the heritage edge language as a construction rule.

8.2. Prompt

“Edit the generated shirt into a sleeveless version while preserving the embroidered/cutwork fabric and overall silhouette. Remove the sleeves and finish the armholes with the same scalloped/wavy edge language seen on the hem. Add a subtle scalloped trim running vertically along the button placket (from collar to hem), keeping the buttons hidden and the overall look minimal and high-end. Keep the same studio setup (window + plant) and the same model.”

8.3. Constraints

- (i) Sleeves fully removed; armholes finished with scalloped edge (not raw cut).
- (ii) Scalloped trim appears only along the front placket (not everywhere).
- (iii) Maintain motif scale/placement; no new embroidery.

8.4. Negative prompt

“no extra lace additions, no new motifs, no heavy ruffles, no neckline changes, no bright colors.”

9. Prompt set A7c (swap back panel to muslin/see-through + remove visible bra)

9.1. Goal

Explore material contrast: heritage front + lightweight transparent back, while keeping styling clean.

9.2. Prompt

“Keep the sleeveless embroidered shirt unchanged on the front and sides, but replace the entire back panel with a different

fabric in the same color, specifically a light muslin/see-through textile. The back should read as sheer and airy, while the front remains structured embroidered linen/cutwork. Ensure styling is clean and editorial; the model should not have a visible bra showing through the back.”

9.3. Constraints

- (i) Back panel only; muslin/see-through, same color family (white/cream).
- (ii) Front remains the heritage embroidered textile.
- (iii) No visible undergarments through the back.

9.4. Negative prompt

“no lace overlay on the back, no color shift, no lingerie visible, no nudity, no transparency in the front panel.”

10. Prompt set A8a (base design: A-line vest, hip length)

10.1. Goal

Generate an editorial full-body image of a trapunto-quilted vest that uses white-on-white embroidered linen, with a dramatic collar and high realism.

10.2. Prompt

“Create a full-body editorial fashion photograph of a beautiful Asian model standing in a bright studio with a window and a plant. She wears a custom-designed sleeveless white linen vest with a distinct A-line (evasé) silhouette, cropped to hip length. The fabric is white-on-white embroidered linen, and the garment is trapunto quilted: stitching follows the exact contours of the floral embroidery to create a high-relief 3D effect. The vest features an exceptionally large, wide Puritan collar with smooth rounded corners extending slightly beyond the shoulders. The front closes with 10 small pearl buttons and has subtly integrated hidden side pockets. Minimalist, high-end, very realistic.”

10.3. Constraints

- (i) White-on-white only; trapunto relief must be visible (not flat).
- (ii) Collar oversized + rounded corners; extends beyond shoulders.
- (iii) Exactly 10 pearl buttons; hidden pockets.

10.4. Negative prompt

“no colored embroidery, no printed florals, no shiny synthetic fabric, no extra buttons, no exaggerated fantasy silhouette, no distortion.”

11. Prompt set A8b (edit: shorten by ~20 cm to a true crop)

11.1. Goal

Push the silhouette into a sharper cropped proportion while preserving all key constraints.

11.2. Prompt

“Shorten the vest length significantly by approximately 20 cm, so it ends just below the bust/upper waist (high-fashion crop). Keep the oversized Puritan collar, A-line shape, white-on-white embroidered linen, visible trapunto quilting relief, and the 10 pearl buttons. Maintain the same model and the same bright studio setting with window and plant.”

11.3. Constraints

- (i) Crop length must read clearly (not almost the same).
- (ii) Do not change collar size, buttons, motif scale, or quilting logic.
- (iii) Keep full-body framing for proportion checking.

11.4. Negative prompt

“no change in collar, no change in embroidery pattern scale, no extra garment layers, no belt.”

12. Prompt set A8c (transform into a one-piece ankle-length dress)

12.1. Goal

Convert the vest concept into a coherent one-piece dress (not a two-piece look), preserving the trapunto/embroidery identity.

12.2. Prompt

“Transform the design into a single-piece, ankle-length dress (one continuous garment, not two separate pieces). Keep the same white-on-white embroidered linen and the same trapunto quilting approach (stitching follows the floral embroidery contours for 3D relief). Maintain the oversized rounded Puritan collar and the front closure language (pearl buttons). The silhouette remains clean and minimal, editorial, photographed full-body in the same bright studio with window and plant.”

12.3. Constraints

- (i) Must read as one garment (no visible waist break / no separate top+skirt).
- (ii) Trapunto relief remains visible across the dress surface.
- (iii) Keep the collar + button language consistent.

12.4. Negative prompt

“no separate skirt, no two-piece styling, no unrelated textures, no color shift.”

13. Prompt set A8d (use sketch as a placement map)

13.1. Goal

Reduce drift by enforcing the sketched morphology as a hard constraint (image+instruction workflow).

13.2. Prompt

“Using the provided sketch as a silhouette guide, create the garment exactly in that shape: a long, front-buttoned, ankle-length dress with oversized rounded collar. Apply the same white-on-white embroidered linen and visible trapunto quilting relief. Keep the design minimal and editorial, realistic studio lighting.”

13.3. Constraints

- (i) Follow sketch proportions (collar size, length, front opening).
- (ii) No reinterpretation of the silhouette beyond the sketch.
- (iii) Trapunto stitching follows the floral embroidery contours.

13.4. Negative prompt

“no alternative silhouettes, no sleeves unless shown, no extra layers.”

14. Prompt set A9a (base brief: vest with strict motif-preservation rules)

14.1. Goal

Generate a wearable vest concept that treats the embroidery as a non-negotiable heritage surface (no scaling, no style drift).

14.2. Prompt

“Create a realistic studio fashion photograph of a beautiful Asian model wearing a sleeveless A-line (evasé) vest made from the provided white linen-blend asprokentima (white-on-white floral embroidery). The vest is constructed from the heritage fabric and then trapunto quilted: stitch exactly on top of the embroidery lines, following the direction of the motifs to create a clear 3D embossed relief. Design details: a large Peter Pan collar, hidden side pockets, hem finishing at the hip, and 10 small pearl buttons down the front. Natural studio lighting, high-end editorial realism.”

14.3. Constraints

- (i) Do not change motif design, scale, stitch style, or colors.

- (ii) Trapunto must visibly follow the floral contours (not generic quilting).
- (iii) Exactly 10 pearl buttons; hidden pockets.

14.4. Negative prompt

“no new embroidery, no print imitation, no motif resizing, no colored accents, no fantasy styling, no extra lace.”

15. Prompt set A9b (edit: shorten to hip level + enlarge collar beyond vest)

15.1. Goal

Force a clearer cropped proportion and make the collar the dominant form element.

15.2. Prompt

“Shorten the vest so it ends at the hip/hip bones. Enlarge the Peter Pan collar so it extends beyond the shoulders (dramatic oversized collar), while keeping the same vest body, embroidery, and trapunto quilting. Maintain realism and garment construction.”

15.3. Constraints

- (i) Crop must end at hip bones (not mid-thigh).
- (ii) Collar extends past shoulder line; corners smooth and rounded.
- (iii) Keep motif placement consistent; no re-layout.

15.4. Negative prompt

“no extra lace additions, no collar reshaping into a different collar type, no button count change.”

16. Prompt set A9c (fix quilting visibility: make trapunto read clearly)

16.1. Goal

Make the technique legible in the output (critical for your faithfulness vs realism discussion).

16.2. Prompt

“Increase the visibility of the trapunto quilting relief so it reads clearly as raised/embossed stitching that follows the floral embroidery contours. Keep everything else unchanged: same fabric, same collar, same silhouette, same buttons and pockets, same lighting.”

16.3. Constraints

- (i) Relief must be visible through shadows/highlights (3D effect).
- (ii) Stitch lines must align with embroidery contours (not a new quilting grid).
- (iii) No new motifs or added decorative stitching.

16.4. Negative prompt

“no flat texture, no generic quilt grid, no extra stitched patterns.”

17. Prompt set A9d (length variation: extend to below navel)

17.1. Goal

Explore a more wearable mid-crop while keeping all heritage constraints.

17.2. Prompt

“Adjust the vest length to end just below the navel (longer than the hip-bone crop), keeping the same A-line vest silhouette, oversized Peter Pan collar, white-on-white aspro kentima, visible trapunto relief, hidden pockets, and 10 pearl buttons. Maintain a realistic studio fashion photo.”

17.3. Constraints

- (i) Length clearly below navel (not micro-crop).
- (ii) Keep collar size and button count unchanged.
- (iii) Preserve motif scale/placement.

17.4. Negative prompt

“no change in motif scale, no color shift, no additional embellishments.”