1. Qualitative Results

In this supplementary materials, we present more examples of both text-to-image and image-to-text on the Fashion-Gen dataset, as shown Figure 1 and Figure 2. As we encode tags separately, the text encoder can also attend on more detailed features of the products. For text-to-image task, in Figure 1 (a), the top-1 retrieved images from the baseline ignores the information *"striping in white and blue"*, and in Figure 1 (b), the baseline ignores the detailed feature *"signet ring"*. Similarly, for image-to-text task, in Figure 2 (a), the retrieved texts from the baseline ignores the *"white printed logo"* information from the image.

Brand: <u>Hood by Air</u>. Short sleeve piqué polo in black. Coated striping in white and blue throughout. Rib knit spread collar with two-button placket. Logo printed in white at waist. Tonal stitching.

Brand: <u>Alexander McQueen</u>. Signet ring in silver-tone brass. Engraved logo at face.

(a)

(b)

Brand: <u>Alexander McQueen</u>. Low-top brushed leather sneakers in white. Round toe. Tonal lace-up closure. Logo stamp in gold-tone at padded tongue. Padded collar. Perforated detailing at sides. Logo graphic printed in gold-tone at black leather heel tab. Tonal textured rubber sole. Tonal stitching. Approx. 1.75" sole.

Brand: <u>Fendi</u>. Long sleeve bonded jersey pullover in ivory. Rib knit crewneck collar. Signature textile, mink, and fox fur 'Fendi Wonders' graphic at front. Dropped shoulders. Tonal stitching.

(c)

(d)

Brand: <u>Valentino</u>. Buffed calfskin shoulder bag in ivory. Double curb chain shoulder strap. Signature pyramid stud detailing at face. Foldover flap with logo-engraved press-release fastening. Patch pocket and textile logo patch at interior. Tonal textile lining. Pale gold-tone hardware. Tonal stitching. Approx. 6.75" length x 5" height x 2" width.\r\n\r\nPart of the Valentino Garavani collection

Brand: <u>Prada</u>. Low-top neoprene sneakers in black. Round toe. Velcro strap at vamp featuring patent and metallic leather logo appliqués. Textured rubber midsole in white. Black treaded rubber outsole. Silver-tone hardware. Tonal stitching.

(e)

(f)

Figure 1. Examples of text-to-image results. For each example, the first row is the query text, the second row is the top-5 retrieved results of fine-tuning CLIP (Experiment (c) in Sec. 5.2), and the third row is the top-5 results from EI-CLIP. The correct answers are boxed in red.

1) Long sleeve nylon wind breaker in dark navy. Drawstring at hood. Zip closure and welt pockets at front. Contrasting ribbed sleeve cuffs and hem in white. Fox appliqué patch at chest. Tonal stitching.

2) Long sleeve neoprene hoodie in navy. Drawstring in off-white at hood. Two-way zip closure at front. Zippered pockets at waist. Contrast panel in heather grey featuring raised logo at chest. Padding insert at cuffs and hem. Silver-tone hardware. Tonal stitching.

3) Long sleeve cotton ripstop jacket in navy. Drawstring-adjustable canvas hood featuring multicolor checked pattern. Zip closure and white printed logo at front. Welt pockets at waist. Rib knit cuffs and hem. Pocket at fully lined interior. Tonal hardware. Tonal stitching.

4) Long sleeve 'classic loopback' French terry hoodie in navy. Drawstring at hood. Two-way zip closure at front. Welt pockets at waist. Raglan sleeves. Signature 'four bar' stripes knit in white at upper sleeve. Rib knit cuffs and hem. Logo patch at front hem. Signature tricolor grosgrain pull-tab at back. Gold-tone hardware. Tonal stitching.

5) Long sleeve 'classic loop' French terry hoodie in navy. Drawstring at hood. Rib knit trim at hood brim and side-seams. Zip closure at front. Welt pockets at waist. Raglan sleeves. Signature 'four bar' striping in white at upper sleeve. Rib knit cuffs and hem. Logo patch at front hem. Gold-tone hardware. Tonal stitching.

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1) Long sleeve cotton ripstop jacket in navy. Drawstring-adjustable canvas hood featuring multicolor checked pattern. Zip closure and white printed logo at front. Welt pockets at waist. Rib knit cuffs and hem. Pocket at fully lined interior. Tonal hardware. Tonal stitching.

2) Long sleeve hoodie in charcoal grey melange. Drawstring closure at hood. Two-way zip closure and logo printed at front. Pockets at waist. Neoprene lining in black. Tonal stitching.

3) Long sleeve French terry hoodie in navy. Drawstring at lined hood. Zip closure and welt pockets at front. Ribbed sleeve cuffs and hem. Logo patch in black and white at hem. Tonal stitching.

4) Long sleeve nylon wind breaker in dark navy. Drawstring at hood. Zip closure and welt pockets at front. Contrasting ribbed sleeve cuffs and hem in white. Fox appliqué patch at chest. Tonal stitching.

5) Long sleeve neoprene hoodie in navy. Drawstring in off-white at hood. Two-way zip closure at front. Zippered pockets at waist. Contrast panel in heather grey featuring raised logo at chest. Padding insert at cuffs and hem. Silver-tone hardware. Tonal stitching.

(a)

1) Long-sleeve shirt in white. 'Slim' fit. Cross print throughout in black. Pointed collar. Concealed button placket at front. Single-button barrel cuff. Tonal stitching.
2) Long sleeve button-up shirt in white. Baroque paisley print in black throughout. Pointed spread collar. Single-button barrel cuffs with gunmetal-tone Medusa medallion buttons. Tonal stitching.
3) Long sleeve shirt in white. Patterned throughout in black and grey. Spread collar. Button closure at front. Tonal stitching. Adjustable single-button barrel cuffs with buttoned sleeve cuffs.
4) Long sleeve cotton flannel shirt featuring check pattern in tones of white and grey. Spread collar. Button closure at front. Patch pocket at chest. Single-button barrel cuffs. Tonal stitching.
5) Long sleeve wool-blend shirt featuring check pattern in tones of heather grey and off-white. Spread collar. Button closure at front. Patch pocket at chest. Single-button barrel cuffs. Tonal stitching.

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1) Long sleeve shirt in white. Patterned throughout in black and grey. Spread collar. Button closure at front. Tonal stitching. Adjustable single-button barrel cuffs with buttoned sleeve cuffs.
2) Long sleeve semi-sheer cotton shirt featuring check pattern in black and white. Raw edge at spread collar. Button closure at front. Patch pocket at chest. Tonal stitching.
3) Long sleeve poplin shirt featuring stripes and skulls print in black and white throughout. Spread collar. Button closure at front. Logo flags in black at hem. Single-button barrel cuffs. Tonal stitching.
4) Long sleeve silk crepe de chine shirt featuring polka dot pattern in black and white. Cuban collar. Button closure at front. Welt pocket at chest. Adjustable single-button barrel cuffs. Tonal stitching.
5) Long sleeve shirt in black and white. Snakeskin graphic print throughout. Spread collar. Button closure at front. Tonal stitching. Single-button barrel cuffs.

(b)

1) Long sleeve brushed wool and mohair-blend jacket featuring check pattern in red and black. Spread collar. Button closure at front. Flap and welt pockets at body. Adjustable single-button barrel cuffs. Pocket at interior. Bonded lining. Tonal stitching.
2) Long sleeve cotton flannel shirt featuring check pattern in red and black. Spread collar. Button closure and patch pocket at front. Shirttail hem. Tonal stitching.
3) Long sleeve crewneck button down plaid shirt in oxblood red. Plaid pattern throughout in tones of red, black, forest green and mauve. Concealed button closure. Straight hem vented at sides. Single button barrel cuffs with buttoned sleeve placket. Tonal stitching.
4) Long sleeve heavyweight cotton shirt featuring tartan pattern in tones of red and black throughout. Spread collar. Button closure at front. Flap pockets at chest. Single-button barrel cuffs. Graphic logo printed in white at back. Tonal stitching.
5) Long sleeve woven wool shirt featuring check pattern in red and black. Spread collar. Button closure at front. Flap pockets at chest. Three-button barrel cuffs. Tonal stitching.

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1) Long sleeve heavyweight cotton shirt featuring tartan pattern in tones of red and black throughout. Spread collar. Button closure at front. Flap pockets at chest. Single-button barrel cuffs. Graphic logo printed in white at back. Tonal stitching.
2) Long sleeve crewneck button down plaid shirt in oxblood red. Plaid pattern throughout in tones of red, black, forest green and mauve. Concealed button closure. Straight hem vented at sides. Single button barrel cuffs with buttoned sleeve placket. Tonal stitching.
3) Long sleeve woven wool shirt featuring check pattern in red and black. Spread collar. Button closure at front. Flap pockets at chest. Three-button barrel cuffs. Tonal stitching.
4) Long sleeve cotton flannel shirt featuring check pattern in red and black. Spread collar. Button closure and patch pocket at front. Shirttail hem. Tonal stitching.
5) Long sleeve shirt in red, white, and black plaid. Fading throughout. Spread collar. Contrasting texture elbow patches in beige. Single-button barrel cuffs. Tonal stitching.

(c)

Figure 2. Examples of image-to-text results. For each example, the left image is the query image. The 5 text descriptions above are results from the fine-tuning CLIP. The 5 text descriptions below are results from our EI-CLIP. The ground truth text descriptions are in blue color.