## Language-Guided Trajectory Traversal in Disentangled Stable Diffusion Latent **Space for Factorized Medical Image Generation**

Supplementary Material

## 1. Train, Validation and Test split

The distribution of samples for both datasets across different splits is shown in Table 3.

Table 3. Number of samples in the train, validation and test splits for both datasets. Note that the artifacts: ink has a lower prevalence compared to others.

	Train	Validation	Test
CheXpert			
Pleural Effusion	62509	10996	12972
Support Devices	78211	13678	16196
ISIC 2019			
Melanoma	2750	454	537
Melanocytic Nevus	9254	1665	1956
Hair	4514	802	989
Gel Bubbles	1300	228	257
Ink	201	34	37
Ruler	1608	308	341

## 2. Bézier interpolations

Our method employs Bézier curve interpolations for smooth attribute trajectory modeling [30] for CheXpert (left image) and ISIC (right image) data. Given a set of points (i.e, conditionally generated style latents:  $P_0, P_1, \ldots, P_n$ ), the Bézier curve of degree n is defined as a linear combination of these points weighted by Bernstein polynomials [19], defined as:

$$B(t) = \sum_{i=0}^{n} \binom{n}{i} (1-t)^{n-i} t^{i} P_{i}, \quad t \in [0,1]$$

## **3.** Interpolated samples

Bézier curve interpolations are performed on the sample points generated by swapping the text embeddings of the "neutral image" with those of the "style-conditioned text prompt" during the reverse diffusion process. Figure 6 shows the interpolated images along the style trajectories for both datasets.



Figure 6. Traversal along the latent trajectories of Stable Diffusion using language guidance. Given a neutral image of a chest X-ray projected onto latent space (start point), traversal along the trajectory is performed via language guidance. Sampling along the trajectory results in only a single attribute (e.g. support devices, pleural effusion, gel bubbles, hairs, ink, ruler) being altered from the start point ("neutral image"), while becoming more severe along each trajectory, while the patient identity is maintained.

Bezier Interpolations Along The Trajectory