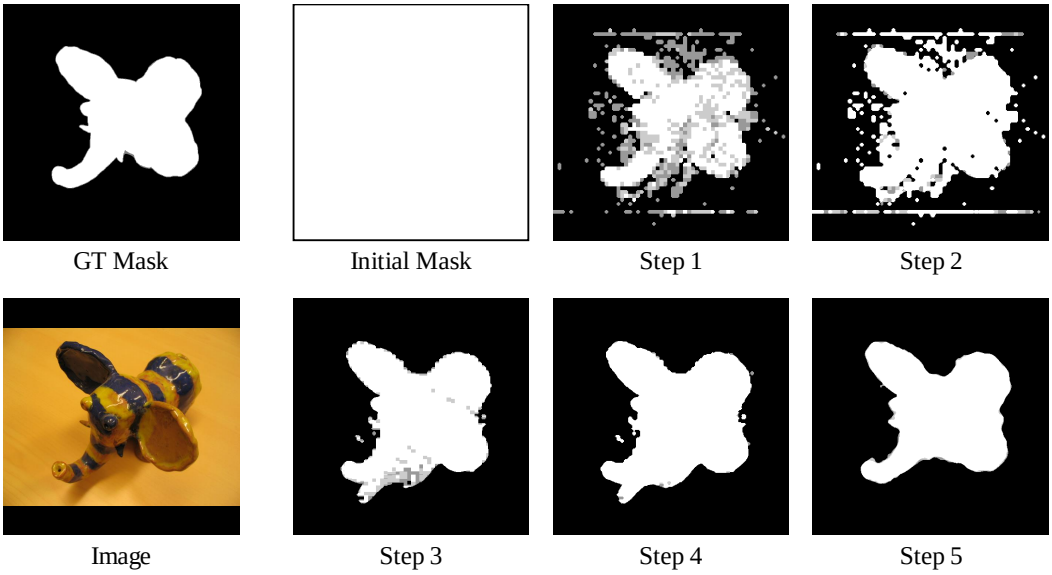

Figure A: **Visualization of AMCP with point prompt.**

Algorithm A Adversarial Masked Contrastive Painting

procedure AMCP(I, M, T) ▷ Image I, Initial mask M, Step number T
  $t \leftarrow 0$
  while $t < T$ **do**
    if $t \bmod 2 = 0$ **then** ▷ I-step
      $I_{inpaint} \leftarrow \phi(I, M)$ ▷ ϕ: Inpainting model
      $\Phi_{paint} \leftarrow B \circ \|\mathcal{E}(I) - \mathcal{E}(I_{inpaint})\|_2$ ▷ B: Bounding box of M, $\mathcal{E}$: DINO
      $\Phi_{color} \leftarrow \mathcal{C}(I, M)$ ▷ $\mathcal{C}$: CRF
      $\Phi_{prompt} \leftarrow \max_l \mathcal{G}(x_l, y_l)$ ▷ $[x_l, y_l]$: Prompt coordinate, $\mathcal{G}$: Gaussian
      $\Phi = \lambda_{paint}\Phi_{paint} + \lambda_{color}\Phi_{color} + \lambda_{prompt}\Phi_{prompt}$ ▷ Contrastive potential
      $\{S_k\}, \{\mu_k\} \leftarrow$k-means$[\Phi]$
      $k^* \leftarrow \arg\max_k \mu_k$
      $\hat{M} \leftarrow S_{k^*}$ ▷ Binarize contrastive potential
      $\Delta^- \leftarrow M - \bar{M}^-$
      $M \leftarrow M \circ (1 - \Delta^-) + \hat{M} \circ \Delta^-$ ▷ Only shrink object mask
    else ▷ O-step
      $I_{outpaint} \leftarrow \psi(I, M)$ ▷ Outpaint image
      $\Phi_{paint} \leftarrow B \circ \|\mathcal{E}(I) - \mathcal{E}(I_{outpaint})\|_2$ ▷ B: Bounding box of M, $\mathcal{E}$: DINO
      $\Phi_{color} \leftarrow \mathcal{C}(I, M)$ ▷ $\mathcal{C}$: CRF
      $\Phi_{prompt} \leftarrow \max_l \mathcal{G}(x_l, y_l)$ ▷ $[x_l, y_l]$: Prompt coordinate, $\mathcal{G}$: Gaussian
      $\Phi = \lambda_{paint}\Phi_{paint} + \lambda_{color}\Phi_{color} + \lambda_{prompt}\Phi_{prompt}$ ▷ Contrastive potential
      $\{S_k\}, \{\mu_k\} \leftarrow$k-means$[\Phi]$
      $k^* \leftarrow \arg\max_k \mu_k$
      $\hat{M} \leftarrow S_{k^*}$ ▷ Binarize contrastive potential
      $\Delta^+ \leftarrow M^+ - M$
      $M \leftarrow M \circ (1 - \Delta^+) + \hat{M} \circ \Delta^+$ ▷ Only expand object mask
    end if
    $t \leftarrow t + 1$
  end while
  return M
end procedure