# Supplementary Material

**Algorithm 1** Mesh Cloning via Euclidean Osmosis

**Input:** · mesh $\mathcal{M}_1$, patch $ROI \subset \mathcal{M}_1$,
· mesh $\mathcal{M}_2$, patch $P \subseteq \mathcal{M}_2$,
**Output:** · cloned mesh $\mathcal{M}^*$.
**Parameters:** · $tol > 0$, $k_{max} \in \mathbb{N}$
**Preliminary set up:**

S1) Alignment and scaling of $ROI$ and $P$,

S2) Construct $X_{ROI}$ and $X_P$ for $ROI$ and $P$ on $\Omega = [0,1]^2$

S3) Construct the triangulation $\overline{ROI}^{\Omega} = (\bar{V}, E, T)$

**Osmotic flow between $u_{ROI}$ and $u_P$:**

- Compute and apply offset $m$, if necessary
- Compute $u_{ROI}$ and $u_P$ as in (14)
- Compute partition of $\overline{ROI}^{\Omega}$ as in (15)
- Set drift term $\mathbf{d}$ as in (16) and initialize $u^0$ as in (17)

while ($\|u^{k+1} - u^k\|_2 / \|u^k\|_2 > tol$) and ($k < k_{max}$)
    $u^{k+1} \longleftarrow Pu^k$ via (EXP) or (IMP) scheme
end

- Set $ROI^* = (u^{k+1} - m, E, T)$
- Set $\mathcal{M}^* = (\mathcal{M}_1 \backslash ROI) \bigcup ROI^*$

**Algorithm 2** Mesh Inpainting via NCC Osmosis

**Input:** · damaged mesh $\mathcal{M}_1$,
**Output:** · repaired mesh $\mathcal{M}^* = (V^*, E^*, T^*)$
**Parameters:** · $tol > 0$, $k_{max} \in \mathbb{N}$
**Preliminary set up:**

S1) Generate $\overline{\mathcal{M}} = (V, E, T)$, with corrupted region $ROI \subset \overline{\mathcal{M}}$, closing holes in $\mathcal{M}_1$ (if necessary)

S2) Compute $\delta_N$, the NCC of the mesh $\overline{\mathcal{M}}$

**Osmotic flow:**

- Compute and apply offset $m$, if necessary
- Set reference function $u_R$ as in (18)
- Set the drift term $\mathbf{d}$ as in (19) and initialize $u^0 = u_R$

while ($\|u^{k+1} - u^k\|_2 / \|u^k\|_2 > tol$) and ($k < k_{max}$)
    $u^{k+1} \longleftarrow Pu^k$ via (EXP) or (IMP) scheme;
end

- Set $\delta^* = u^{k+1} + m$
- Solve (3) for $V^*$
- Set $\mathcal{M}^* = (V^*, E, T)$.