**Algorithm 1:** Selection2Sieve(S2S)

**Input:** 噪声数据 $\tilde{\mathcal{D}} = \{(\mathbf{x_i}, \tilde{\mathbf{y}}_\mathbf{i})\}_{i=1}^{n}$ 可学习的特征提取网络 $\mathcal{V}(\cdot\,;\Theta_1)$、分类网络 $f(\cdot\,;\Theta_2)$、OOD 检测网络 $F^j(\cdot\,;\Theta_3^j)\ \forall\, j \in \mathcal{Y}$, 总体网络参数为 $\theta$. 权重 $\lambda_{con}$, $\lambda_e$, $\lambda_{id}$. 训练周期数 E. 预热网络周期数 selection_epochs, 筛选开始周期数 sieve_epochs. 学习率 $\eta$. 每个周期迭代次数 iters. 阈值 $\tau_{clean}$, $\tau$.

**Output:** 网络参数 $\theta = (\Theta_1, \Theta_2, \Theta_3)$.

**for** $e$ ***from*** *1* ***to*** $E$ **do**
  $step = 0$
  // 预热网络
  **if** *e<selection_epochs* **then**
    **while** $step < iters$ **do**
      采样 $\mathcal{B} \subseteq \tilde{\mathcal{D}}$
      计算 $\mathcal{L}(\mathcal{B};\theta) = \mathcal{L}_{CE}(\mathcal{B};\Theta_1,\Theta_2)$
      $\theta = \theta - \eta \cdot \nabla_\theta \mathcal{L}(\mathcal{B};\theta)$
      $step = step + 1$
    **end**
  **else**
    // 划分干净样本集和无标记样本集 $\mathcal{D}_c, \mathcal{D}_u$
    **if** *e=selection_epochs* **then**
      划分 $\mathcal{D}_c \subseteq \tilde{\mathcal{D}}$; $\mathcal{D}_u = \tilde{\mathcal{D}} - \mathcal{D}_c$
    **end**
    // 筛选 ID 样本
    **if** *e>sieve_epochs* **then**
      筛选 $\mathcal{D}_{id} \subseteq \mathcal{D}_u$; $\mathcal{D}_{ood} = \mathcal{D}_u - \mathcal{D}_{id}$
    **end**
    **while** $step < iters$ **do**
      采样 $\mathcal{B} \subseteq \mathcal{D}_c$; $\mathcal{U} \subseteq \mathcal{D}_u$
      $\mathcal{L}(\mathcal{B},\mathcal{U};\theta) = \mathcal{L}_{sup} + \lambda_{con}\mathcal{L}_{con} + \lambda_e\mathcal{L}_e$
      **if** *e>sieve_epochs* **then**
        采样 $\mathcal{B}_{id} \subseteq \mathcal{D}_{id}$
        $\mathcal{L} += \lambda_{id}\mathcal{L}_{id}(\mathcal{B}_{id};\theta)$
      **end**
      $\theta = \theta - \eta \cdot \nabla_\theta \mathcal{L}(\mathcal{B},\mathcal{B}_{id},\mathcal{U};\theta)$
      $step = step + 1$
    **end**
  **end**
**end**