Appendix A Pseudocode w.r.t. TSSC and IDDG

Algorithm 1 The TSSC Algorithm

Input: dataset $\mathbf{X}$, the number of neurons Q^2.
Output: k clusters.

1. **TR:**
   1.1 Construct RSOM from dataset $\mathbf{X}$ according to Eqs. (1)-(2).
   1.2 Adjust neurons to align with the center of dataset $\mathbf{X}$.
2. **TDP:**
   2.1 Calculate the local topological density ratio on micro-cluster centers according to Eqs. (4)-(5).
   2.2 Determine and remove BNs.
3. **TGM:**
   3.1 Merge micro-clusters by calculating the separation of adjacent micro-clusters according to Eqs. (6)-(8).
   3.2 Calculate global compactness and global separability two measures according to Eqs. (9)-(11).
   3.3 Obtain k clusters from the minimum value of the sum of global separability and global compactness according to Eq. (12).

Algorithm 2 The IDDG Algorithm

Input: dataset $\mathbf{X}$, Imbalanced Ratio of dataset IR, the number of clusters within dataset k.
Output: data chunk at t-th time-stamp $\mathbf{X}^t$.
$k^t \sim \text{DiscreteUniform}(\mathbb{N} \cap [2, k])$.
$\mathfrak{n} \leftarrow$ sort the number of clusters in $\mathbf{X}$ in ascending order.
for $i \leftarrow 1$ to $k^t - 1$ **do**
    $IR_i^t \sim \text{DiscreteUniform}(\mathbb{Z} \cap (1, IR])$;
end for
$IR^t \leftarrow$ sort IR^t in ascending order.
$\mathfrak{n}_1^t \leftarrow \mathfrak{n}_1$; ▷ quantity represented by $\mathfrak{n}_1$ is the smallest.
for $i \leftarrow 2$ to k^t **do**
    if $IR_{i-1}^t \cdot \mathfrak{n}_{i-1} \leq \mathfrak{n}_i$ **then**
        $\mathfrak{n}_i^t \leftarrow IR_{i-1}^t \cdot \mathfrak{n}_{i-1}$;
    else
        $\mathfrak{n}_i^t \leftarrow \mathfrak{n}_i$.
    end if
end for
$\mathfrak{n}_i^t$ data points are randomly taken from the i-th cluster and form the $\mathbf{X}^t$.

Appendix B Supplementary Results

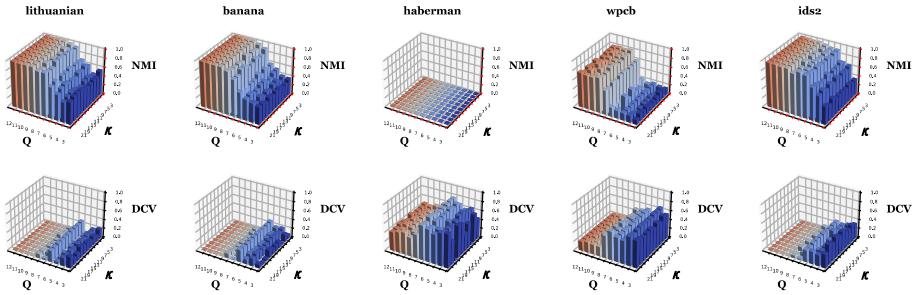

Fig. B1: Performance with different Q-κ value combinations on datasets.