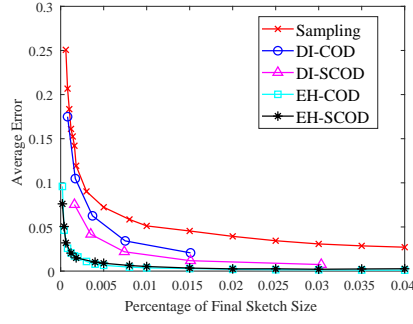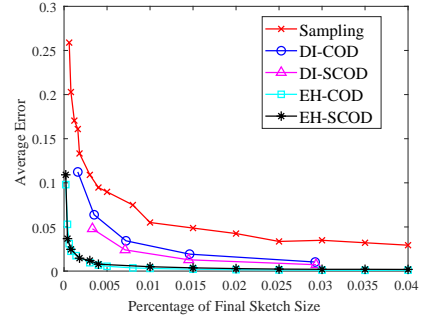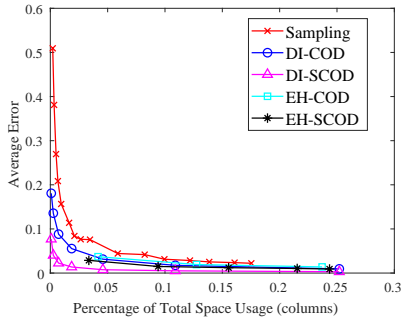(a) APR  (b) PAN11  (c) EURO0
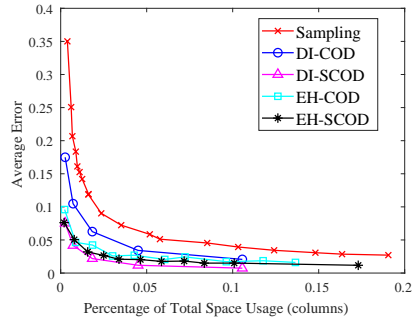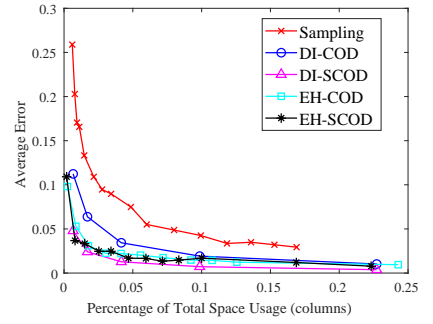
**Figure 1: error vs. percentage of final sketch size**



(a) APR  (b) PAN11  (c) EURO0

**Figure 2: error vs. percentage of total space usage**

The size of window is 10000(columns).