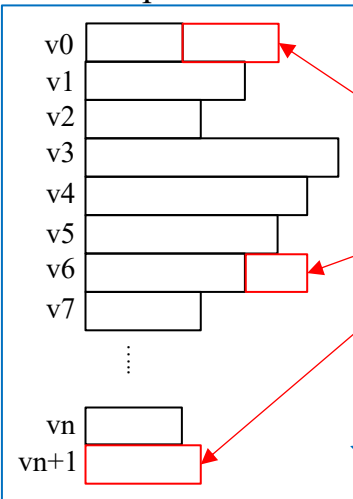
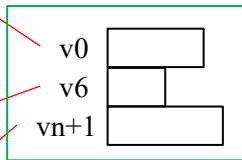


Data Graph



Edge Graph

Step2: Insert Edge Graph to Data Graph



Step1: Sort Edge Graph

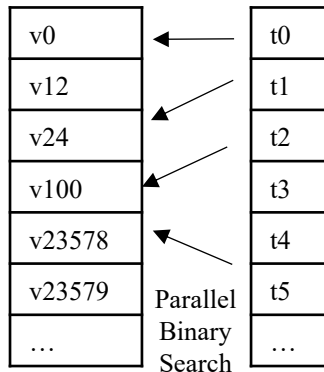
Step3: Update Unified Virtual Address

GPU Global Memory

Points to
CPU

Array of
sampled
vertices

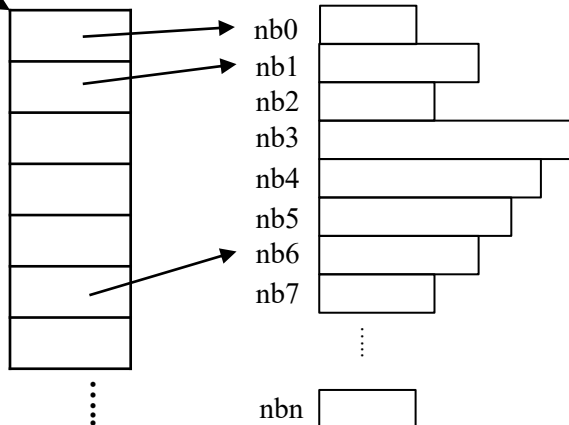
Candidate
vertices in
for-loop

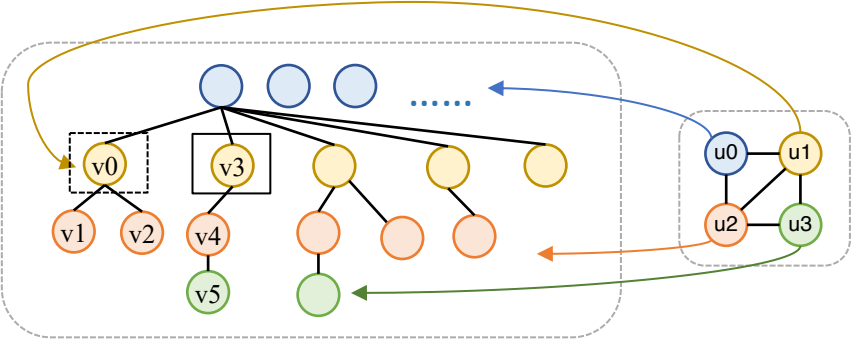


CPU Main Memory

Array of
addresses

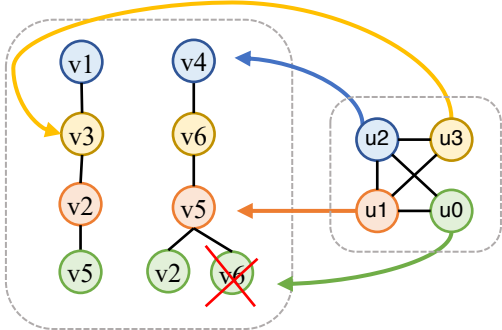
Dynamic data graph





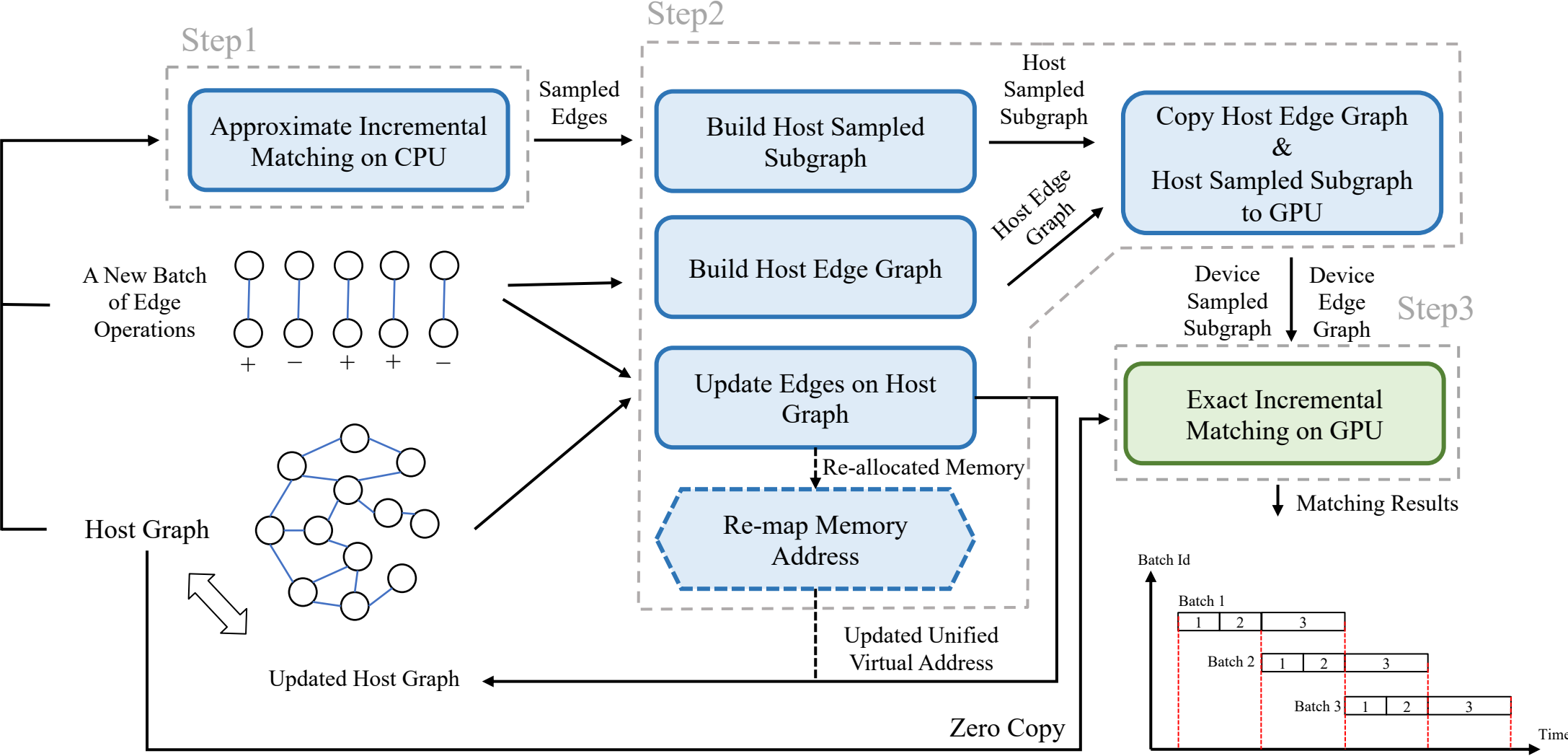
$\text{for}(v_0, v_1 \in \Delta E) \left\{ \right.$
 $\text{for}(v_2 \in N(v_0) \cap N'(v_1))$
 $\text{for}(v_3 \in N(v_0) \cap N(v_2))$

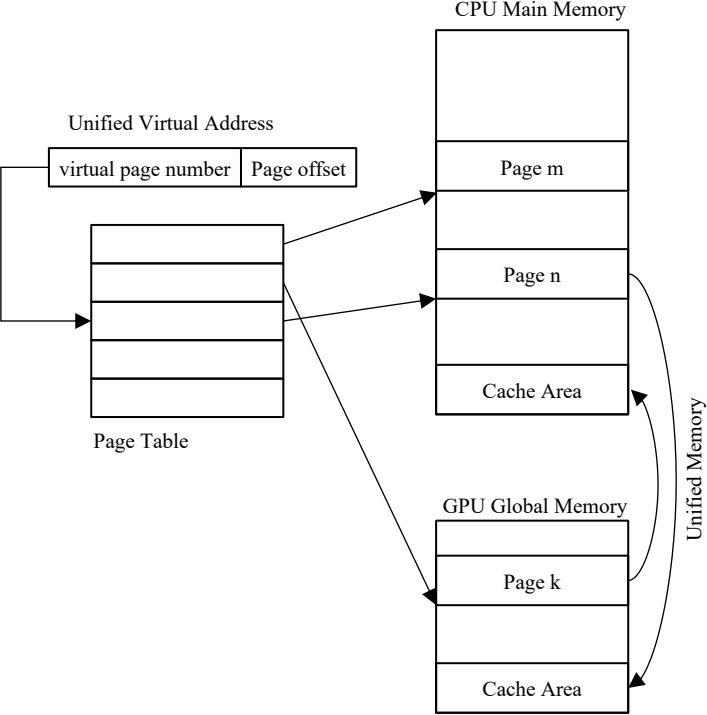
Set Intersections



Search Tree

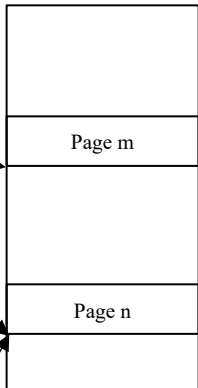
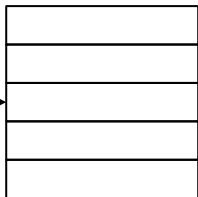
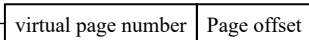
Query Graph



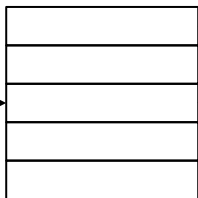
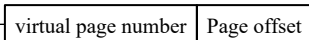


CPU Virtual Address

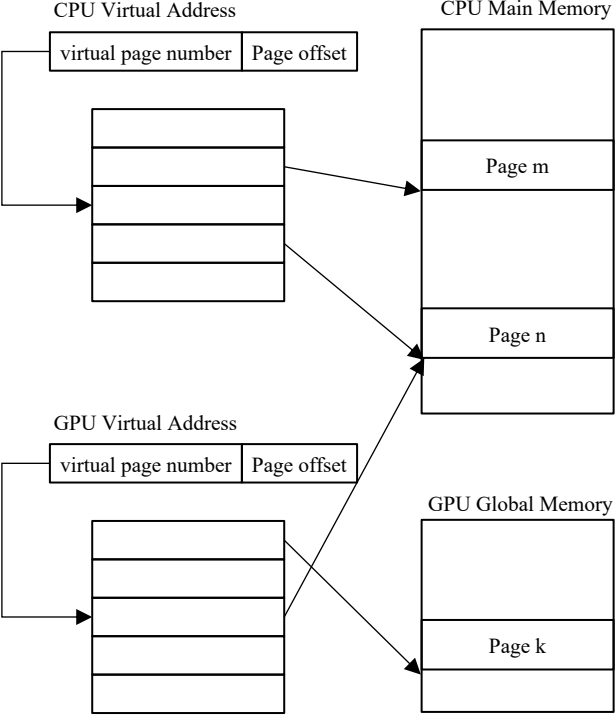
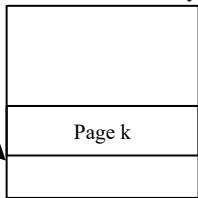
CPU Main Memory



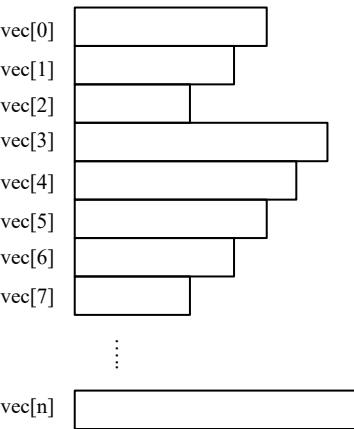
GPU Virtual Address



GPU Global Memory

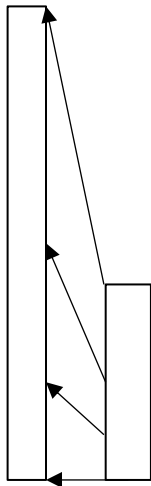


Adjacency List



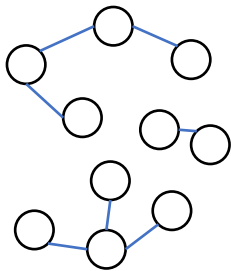
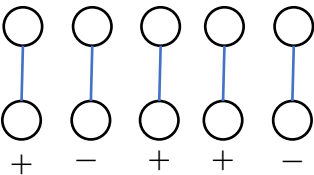
Host Graph

Compressed Sparse Row

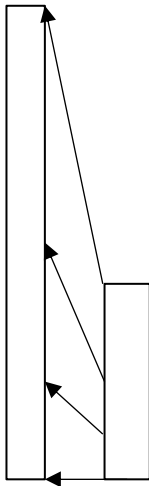


Host Sampled Subgraph

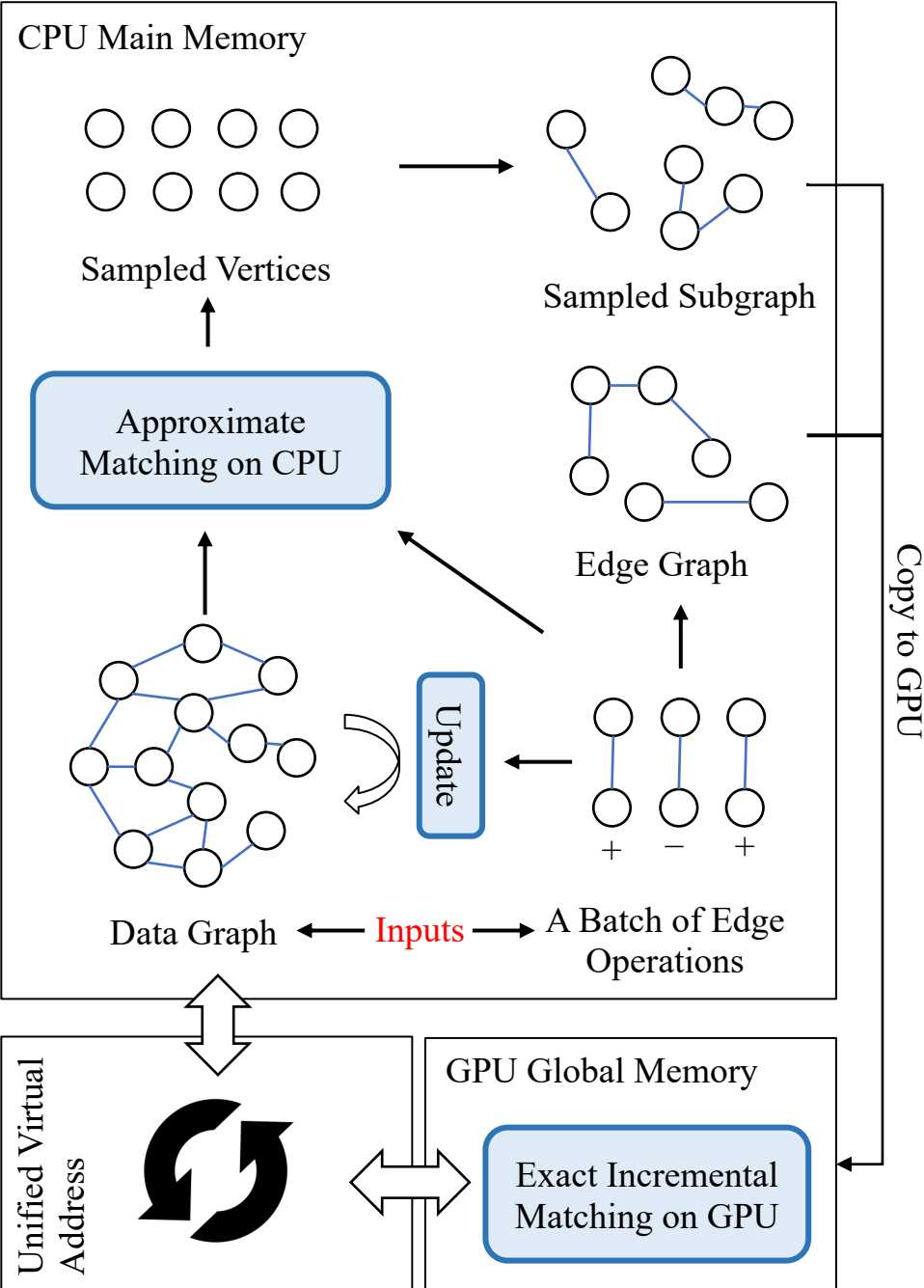
Compressed Sparse Row

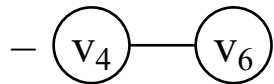
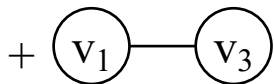


Host Sampled Subgraph

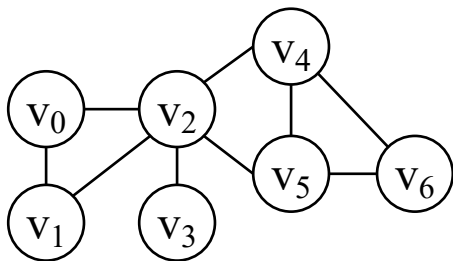


Host Edge Graph

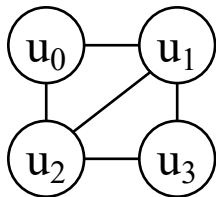




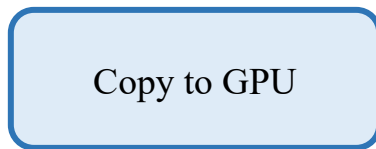
**A Batch of
Edge Update**



Data Graph G



Query Graph Q



Sampled Vertices

