PFLOCK Report

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Working on ICPE - Range Join

- ▶ The Range Join procedure from ICPE has been implemented.
- ▶ Algoritms GridAllocate and GridQuery are done and integrated with the previous code.
- ▶ I have tested the results to find maximal disks with our implementation. Outputs are identical.
- ▶ I am re-running the experiments with LA_10K and LA_25K for consistency.

Working on Brinkhoff dataset (duplicates records)

- ▶ Keeping 9.5M distinct records aside.
- ▶ 'Fixing' the remaining 12.5M records. For each duplicate record:
  - ▶ Create a new Id, move location 1m north-east, keep same time instant.
  - ▶ The slight movement still can generate new duplicates but they were very few. They were removed accordingly.
- ▶ The results has 39870 trajectories and 22M points (no duplicates).

What is next?

- ► Run experiments with Brinkhoff dataset.
- ► Explore the pattern enumeration strategy proposed on Chen et al. Indeed, I already have worked on the ID-based partitioning technique.
- ► I also would like to explore the use of Spark Streaming to manages trajectories online and be able to use window operations. For example: ...
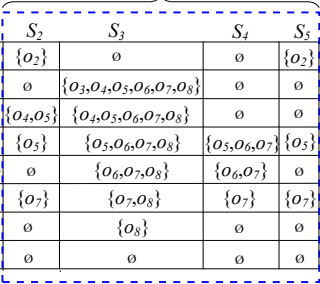
Window operations

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
task 1 for o_1	$\{o_2\}$	$\{o_2\}$	ø	ø	$\{o_2\}$	ø	$\{o_2,o_3\}$	ø
task 2 for o_2	ø	ø	$\{o_3,o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_3,o_4,o_5,o_6\}$	$\{o_3\}$	ø
task 3 for o_3	$\{o_4\}$	$\{o_4,o_5\}$	$\{o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_4,o_5,o_6\}$	ø	ø
task 4 for o_4	ø	$\{o_5\}$	$\{o_5,o_6,o_7,o_8\}$	$\{o_5,o_6,o_7\}$	$\{o_5\}$	$\{o_5,o_6\}$	$\{o_5,o_6,o_7\}$	$\{o_5,o_6,o_7\}$
task 5 for o_5	$\{o_6,o_7\}$	ø	$\{o_6,o_7,o_8\}$	$\{o_6,o_7\}$	ø	$\{o_6\}$	$\{o_6,o_7\}$	$\{o_6,o_7\}$
task 6 for o_6	$\{o_7\}$	$\{o_7\}$	$\{o_7,o_8\}$	$\{o_7\}$	$\{o_7\}$	ø	$\{o_7\}$	$\{o_7\}$
task 7 for o_7	ø	ø	$\{o_8\}$	ø	ø	$\{o_8\}$	ø	ø
task 8 for o_8	ø	ø	ø	ø	ø	ø	ø	ø

δ

t_4

Window operations

δ

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
task 1 for o_1	$\{o_2\}$	$\{o_2\}$	ø	ø	$\{o_2\}$	ø	$\{o_2,o_3\}$	ø
task 2 for o_2	ø	ø	$\{o_3,o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_3,o_4,o_5,o_6\}$	$\{o_3\}$	ø
task 3 for o_3	$\{o_4\}$	$\{o_4,o_5\}$	$\{o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_4,o_5,o_6\}$	ø	ø
task 4 for o_4	ø	$\{o_5\}$	$\{o_5,o_6,o_7,o_8\}$	$\{o_5,o_6,o_7\}$	$\{o_5\}$	$\{o_5,o_6\}$	$\{o_5,o_6,o_7\}$	$\{o_5,o_6,o_7\}$
task 5 for o_5	$\{o_6,o_7\}$	ø	$\{o_6,o_7,o_8\}$	$\{o_6,o_7\}$	ø	$\{o_6\}$	$\{o_6,o_7\}$	$\{o_6,o_7\}$
task 6 for o_6	$\{o_7\}$	$\{o_7\}$	$\{o_7,o_8\}$	$\{o_7\}$	$\{o_7\}$	ø	$\{o_7\}$	$\{o_7\}$
task 7 for o_7	ø	ø	$\{o_8\}$	ø	ø	$\{o_8\}$	ø	ø
task 8 for o_8	ø	ø	ø	ø	ø	ø	ø	ø

t_5

Window operations

$$\delta$$

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
task 1 for o_1	$\{o_2\}$	$\{o_2\}$	ø	ø	$\{o_2\}$	ø	$\{o_2,o_3\}$	ø
task 2 for o_2	ø	ø	$\{o_3,o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_3,o_4,o_5,o_6\}$	$\{o_3\}$	ø
task 3 for o_3	$\{o_4\}$	$\{o_4,o_5\}$	$\{o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_4,o_5,o_6\}$	ø	ø
task 4 for o_4	ø	$\{o_5\}$	$\{o_5,o_6,o_7,o_8\}$	$\{o_5,o_6,o_7\}$	$\{o_5\}$	$\{o_5,o_6\}$	$\{o_5,o_6,o_7\}$	$\{o_5,o_6,o_7\}$
task 5 for o_5	$\{o_6,o_7\}$	ø	$\{o_6,o_7,o_8\}$	$\{o_6,o_7\}$	ø	$\{o_6\}$	$\{o_6,o_7\}$	$\{o_6,o_7\}$
task 6 for o_6	$\{o_7\}$	$\{o_7\}$	$\{o_7,o_8\}$	$\{o_7\}$	$\{o_7\}$	ø	$\{o_7\}$	$\{o_7\}$
task 7 for o_7	ø	ø	$\{o_8\}$	ø	ø	$\{o_8\}$	ø	ø
task 8 for o_8	ø	ø	ø	ø	ø	ø	ø	ø

$$t_6$$

Window operations

δ

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
task 1 for o_1	$\{o_2\}$	$\{o_2\}$	ø	ø	$\{o_2\}$	ø	$\{o_2,o_3\}$	ø
task 2 for o_2	ø	ø	$\{o_3,o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_3,o_4,o_5,o_6\}$	$\{o_3\}$	ø
task 3 for o_3	$\{o_4\}$	$\{o_4,o_5\}$	$\{o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_4,o_5,o_6\}$	ø	ø
task 4 for o_4	ø	$\{o_5\}$	$\{o_5,o_6,o_7,o_8\}$	$\{o_5,o_6,o_7\}$	$\{o_5\}$	$\{o_5,o_6\}$	$\{o_5,o_6,o_7\}$	$\{o_5,o_6,o_7\}$
task 5 for o_5	$\{o_6,o_7\}$	ø	$\{o_6,o_7,o_8\}$	$\{o_6,o_7\}$	ø	$\{o_6\}$	$\{o_6,o_7\}$	$\{o_6,o_7\}$
task 6 for o_6	$\{o_7\}$	$\{o_7\}$	$\{o_7,o_8\}$	$\{o_7\}$	$\{o_7\}$	ø	$\{o_7\}$	$\{o_7\}$
task 7 for o_7	ø	ø	$\{o_8\}$	ø	ø	$\{o_8\}$	ø	ø
task 8 for o_8	ø	ø	ø	ø	ø	ø	ø	ø

t_7

Window operations

δ

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
task 1 for o_1	$\{o_2\}$	$\{o_2\}$	ø	ø	$\{o_2\}$	ø	$\{o_2,o_3\}$	ø
task 2 for o_2	ø	ø	$\{o_3,o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_3,o_4,o_5,o_6\}$	$\{o_3\}$	ø
task 3 for o_3	$\{o_4\}$	$\{o_4,o_5\}$	$\{o_4,o_5,o_6,o_7,o_8\}$	ø	ø	$\{o_4,o_5,o_6\}$	ø	ø
task 4 for o_4	ø	$\{o_5\}$	$\{o_5,o_6,o_7,o_8\}$	$\{o_5,o_6,o_7\}$	$\{o_5\}$	$\{o_5,o_6\}$	$\{o_5,o_6,o_7\}$	$\{o_5,o_6,o_7\}$
task 5 for o_5	$\{o_6,o_7\}$	ø	$\{o_6,o_7,o_8\}$	$\{o_6,o_7\}$	ø	$\{o_6\}$	$\{o_6,o_7\}$	$\{o_6,o_7\}$
task 6 for o_6	$\{o_7\}$	$\{o_7\}$	$\{o_7,o_8\}$	$\{o_7\}$	$\{o_7\}$	ø	$\{o_7\}$	$\{o_7\}$
task 7 for o_7	ø	ø	$\{o_8\}$	ø	ø	$\{o_8\}$	ø	ø
task 8 for o_8	ø	ø	ø	ø	ø	ø	ø	ø

t_8