**Motivation**

- **Recurring query** extracts insights and captures evolutions in big data.

**Recurring Query Example:**

SELECT TOP 50 * FROM Topics
WHERE Keywords LIKE '%plane%' GROUP BY Country

**PRO Optimizer**

Each vertex represents an execution

Effective pruning strategies avoid entire-space search

Complexity: $O(k^2|V|)$

**Challenges**

- Intractable Search Space of Execution Selection
- Stochastic Execution Cost

**Experimental Study**

- Runtime Performance
- Result Quality
- Robustness

**Innovations of PRO**

- Integrates recurring query with **user preferences**.
- **Execution relation graph** effectively models the interdependencies and stochastic execution costs.
- **PRO optimizer** can produce an **optimal** execution plan.