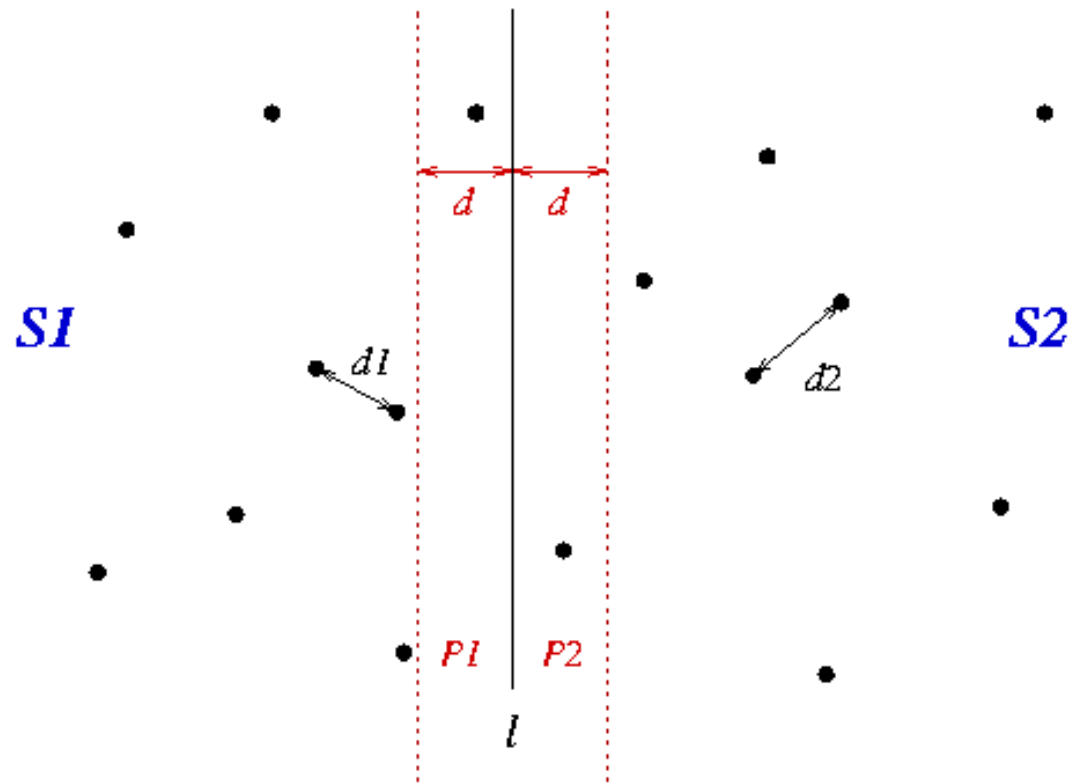


# Streaming Algorithms proposal

0656124 劉承順

# Closest Pair problem

- 一群點當中，距離最近的兩個點叫作「最近點對」。
- Deterministic algorithm runs in  $O(n \log n)$ .
- **divide and conquer**: 把平面切割成左右兩側，答案分為「最近點對在左側」、「最近點對在右側」、「最近點對橫跨兩側」三種情形。



# Streaming model

- a sequence of points, given one by one as the input.
- Suppose the optimal solution is  $\lambda$ .
- Find a solution among at least  $(1 - \varepsilon)n$  given points w.h.p.
- The solution must  $\leq \lambda$ .
- 作法：隨機取樣至少  $(1 - \varepsilon)n$  個點

# problems

- Time complexity
- space complexity
- in  $R^2$ ?  $R^3$ ?