Competence guided incremental footprint-based retrieval

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Introduction

- CBR success depends largely on the **RETRIEVAL process**

- Retrieval method contains 2 set of procedures: **similarity assessment** and **case searching**

- Example: exhaustive searching, decision tree

- Simplest approach to reduce retrieval cost: search **reduced/edited case base**

Footprint-based retrieval / FBR

- Retrieval technique introduced by Smyth and McKenna

- Uses **case competence model** to guide retrieval

- Highly efficient and achieves **NEAR**-optimal competence and quality

- Later, FBR is improved to guarantee optimal retrieval competence and quality: iFBR

Model of case competence

Footprint Case
Related Set
Non-footprint Case
Competence Group
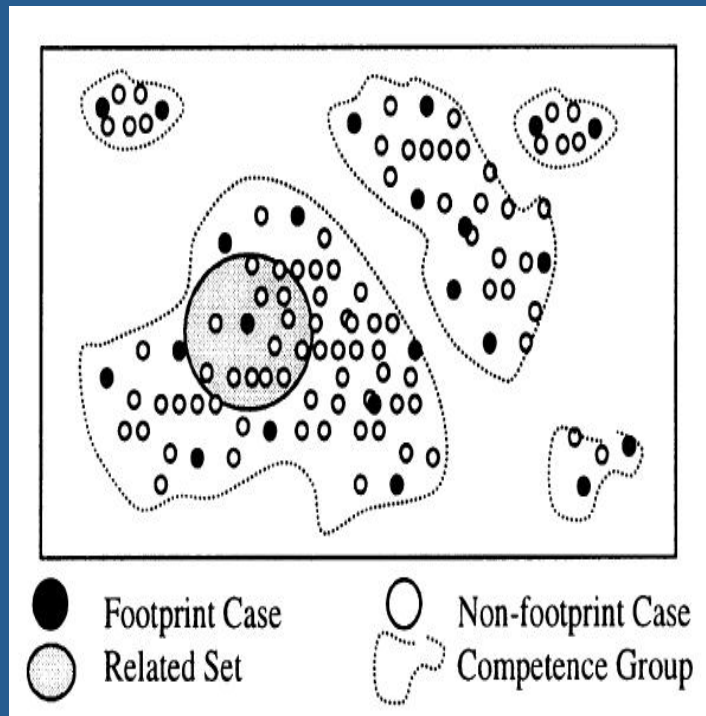
- Local competence contribution of a case: coverage and reachability set

- Related set

- Shared coverage

- Competence group

- Footprint case

- Footprint set

FBR

Footprint Case ● | Non-footprint Case ○
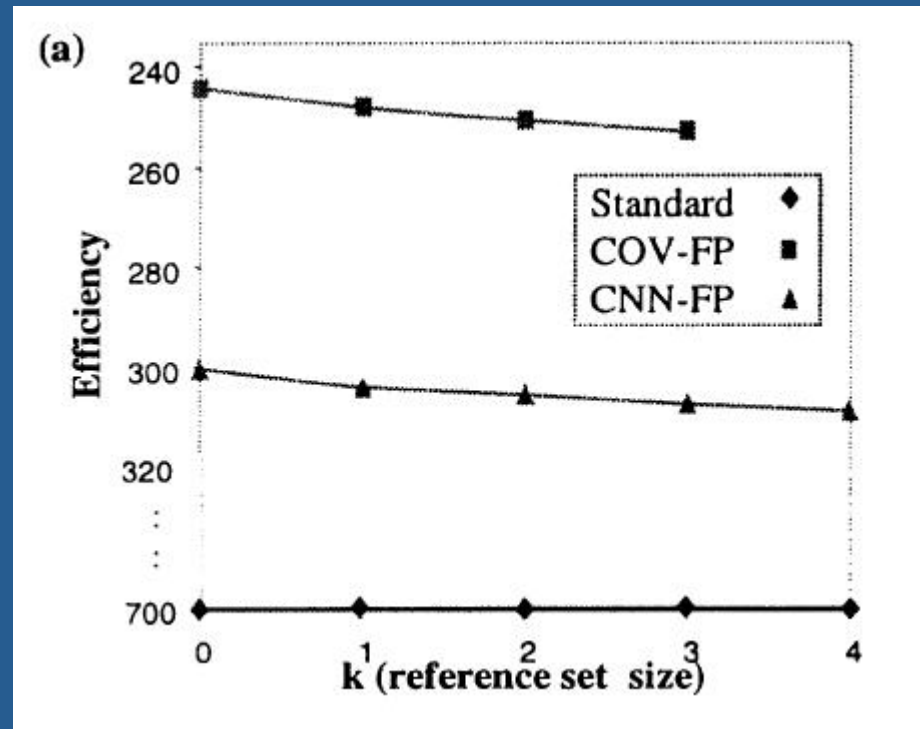Related Set ⊙ | Competence Group
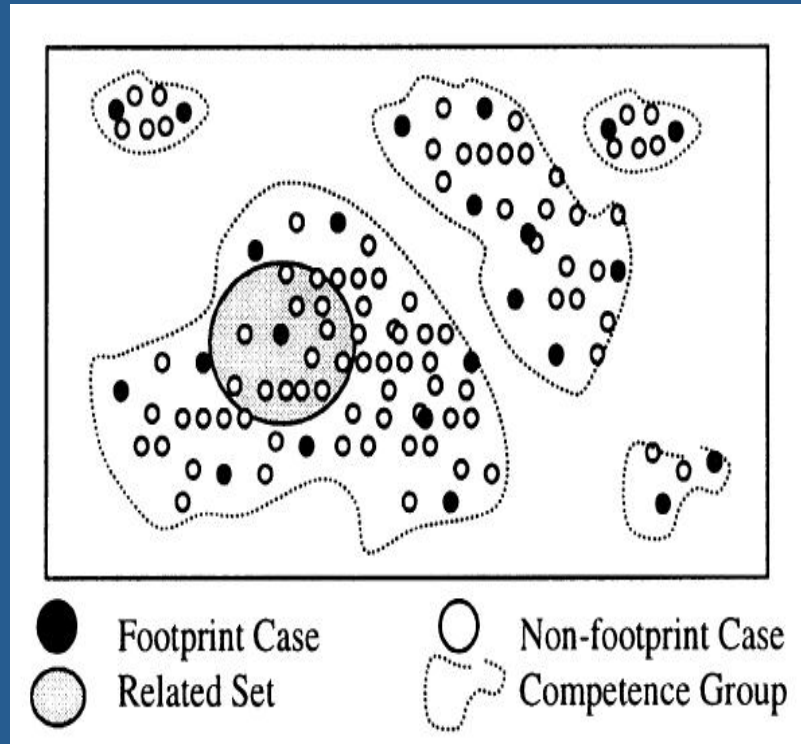
- Stage 1: Retrieving from footprint set
- Stage 2: Retrieving from related set

Extension to FBR

- FBR problem: best case may not be within the related set of reference case

- Solution: Incremental FBR/ iFBR

- iFBR: extending stage 2 of FBR beyond related set of one reference case

- How? Get k best footprint cases as reference set and search the union of the related set of the k cases

Experimentation- efficiency

Experimentation - optimality