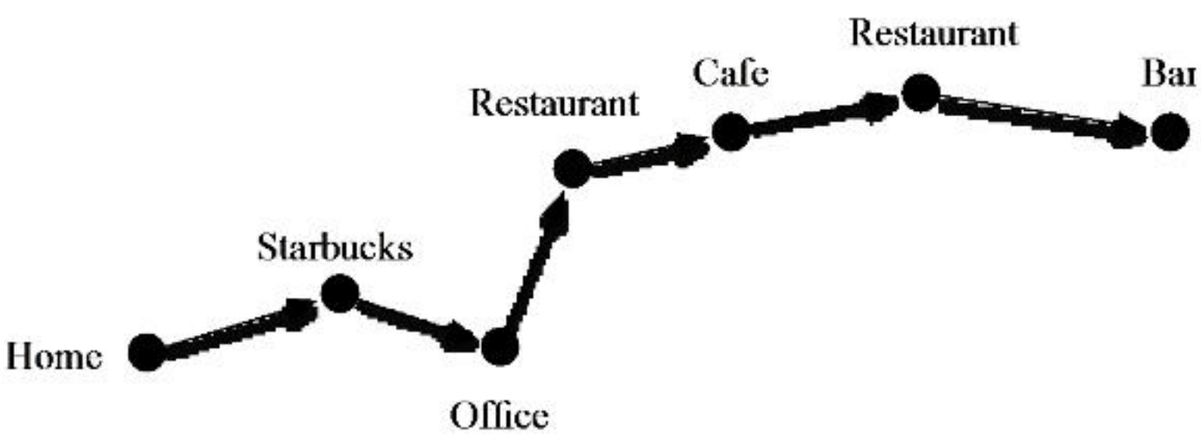
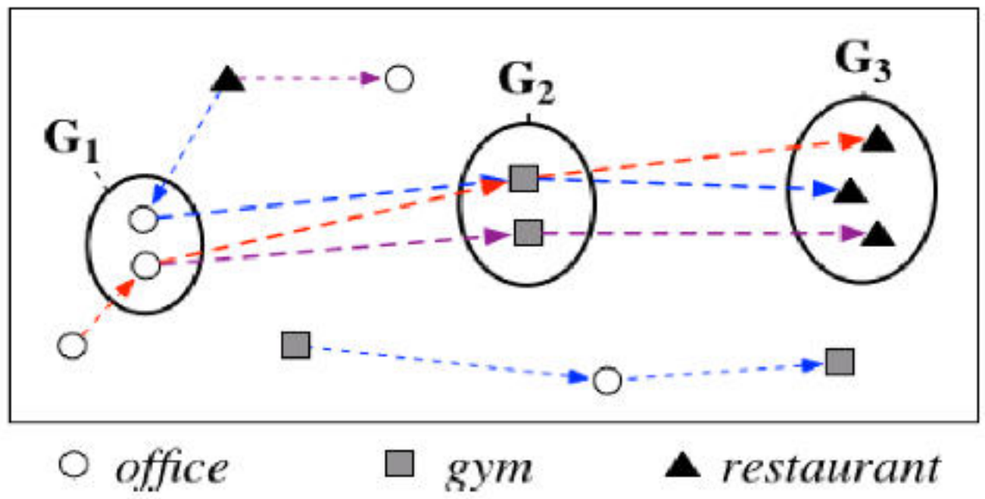
Mining Semantics-Rich Movement Patterns

Mining Frequent Movement Patterns

- **Frequent Movement Pattern:** A movement sequence that frequently appears in the input trajectory database
- **Frequent Movement Pattern vs. Frequent Sequential Pattern**
  - Both aim at finding frequent subsequences from the input sequence database
  - For mining frequent movement patterns, similar places may need to be grouped to collectively form frequent subsequences



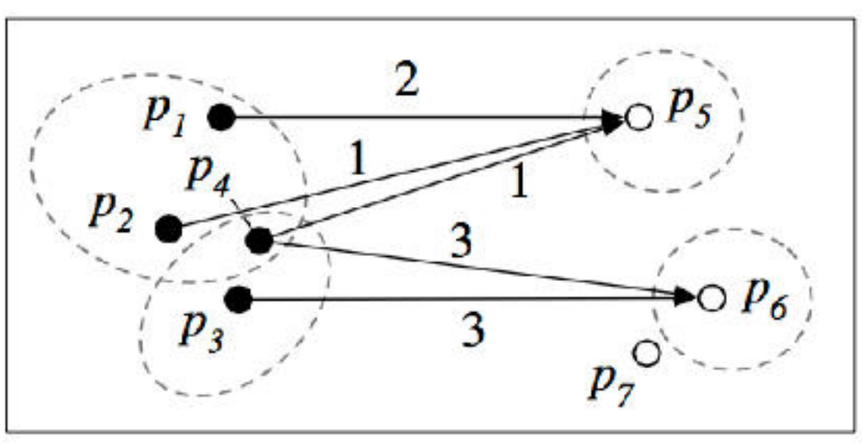
An example trajectory

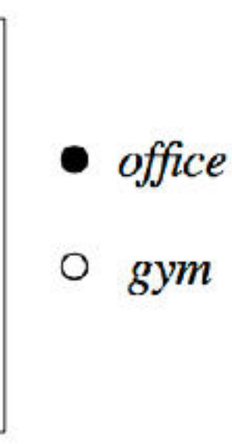


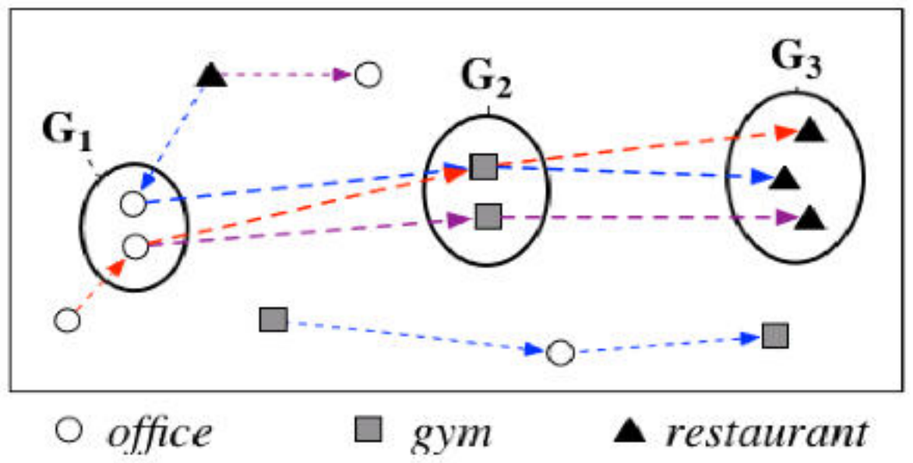
An example movement pattern

Mining Semantics-Rich Movement Patterns

- **Semantics-rich movement pattern**: In addition to knowing how people move from one region to another, we also want to understand the functions of the regions
- **A two-step top-down mining approach:**
  - Step 1: Find a set of coarse patterns that reflect people's semantics-level transitions (e.g., office → restaurant, home → gym)
  - Step 2: Split each coarse pattern into several fine-grained ones by grouping similar movement snippets







C. Zhang et al., Splitter: Mining Fine-Grained Sequential Patterns in Semantic Trajectories, VLDB 2014