On the Complexity of Exploration in Goal-Driven Navigation
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Goal-Dependency Graphs for EscapeRoom

(d) start → key → door → exit
(e) start → key → door → exit
(f) Sample environment (f)

Hitting Time as an Exploration Complexity Measure

1. Define goal graph:
   \[ D_{ii} := \sum_{j=1}^{n} W_{ij}, \quad D_{ij} := 0, \forall i \neq j \]

2. Compute expected hitting time by solving:
   \[ Lx = b \quad \text{s.t.} \quad x_t = 0 \]
   \[ b_s = 1, \quad b_t = -1, \quad b_k = 0 \forall k \notin \{s, t\} \]

Performance vs. Hitting Time

- Success rate (%)
- Episode length (%)