

HIROSHIMA UNIVERSITY広島大学

課題３PageRank (Homework 3)

Big Data KA218001

ビッグデータKA218001

**Submission Information**

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| Date | Student ID | Name |
| 21/1/2025 (DD/MM/YYYY) | C240424 | Yousef Ibrahim Gomaa Mahmoud Mabrouk |

**答え:**

A diagram of a diagram

Description automatically generated

1. *Construct the transition matrix M for the illustrated graph:*
   * where matrix *M* is stochastic (elements per column add up to 1),
   * there are *n* column vectors where *n* is the number of pages,
   * and each element *j* in each column *i* represents the probability of the surfer being at page *j* in the next time step*.* (page does not out-link to itself ~spider trap)
2. *Calculate the limiting distribution :* ( is the principal eigenvector)
   * The graph is strongly connected.
   * There are no dead ends. (and no teleporting ~~β~~)
   * Assuming initial probability of a surfer being at any of these pages (1/n), then:

* Multiplying v over multiple steps by M recursively:
* Or using the power iteration method:
  + - Solving:
* Finally, vector *v* carries the values of final PageRank ~importance for each corresponding page.