

Description:

This Rust project focuses on analyzing communication patterns within a social network using the PageRank algorithm. The dataset, loaded from `communication.csv`, captures communication links between individuals. The program constructs a weighted directed graph to represent these relationships, allowing for in-depth analysis and identification of influential nodes.

Load Data: Ensure `communication.csv` exists with columns `start` and `end` denoting communication links. **Configure Parameters (Optional):** Adjust damping factor and iteration count in the `PageRank::new` function in `main.rs`. **Run the Program:** Execute using: `cargo run`. **Output:** Upon running, the program provides:

Degree Centrality: Top 5 nodes by in-degree, out-degree, and combined degree, showcasing communication hubs. **Simple Betweenness Centrality:** Top 5 nodes by simple betweenness centrality, revealing nodes with significant communication paths.

PageRank Analysis: Top 5 nodes identified by PageRank, indicating influential individuals based on their communication impact.

Visualization: The program generates a dot-format graph visualization for deeper insights into communication patterns. Utilize Graphviz tools to visualize and explore the network structure visually.

Conclusion: This project facilitates a nuanced understanding of communication dynamics within a social network. The combination of centrality metrics and the PageRank algorithm uncovers influential nodes, contributing to a comprehensive analysis of the network's structure and key players. Finally, I created a mod for tests which ensure that each function within the `impl` works as expected.