

Assignment 2

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In our analysis of the IMDB top 250 movies dataset, we have computed several centrality measures for key actors, revealing intriguing insights about their roles within the network.

0.1 Robin Williams

For Robin Williams, the Local Clustering Coefficient is relatively high at 0.32, indicating that his co-stars are likely to have worked together as well. His Betweenness Centrality is 0.01229, reflecting a significant role in connecting disparate actors. His Closeness Centrality score of 0.198 suggests moderate efficiency in reaching others in the network, and his Degree Centrality of 0.01333 denotes a strong number of direct collaborations. Robin Williams's Eigenvector Centrality stands at 0.02025, which points to his connections with other influential actors.

0.2 Christian Bale

Christian Bale exhibits a lower Local Clustering Coefficient of 0.193, a Betweenness Centrality of 0.02356 that marks him as a pivotal figure in the network, and a higher Closeness Centrality of 0.232, indicating quicker access to other actors in the network. His Degree Centrality of 0.02403 and Eigenvector Centrality of 0.18109 are the highest among the three, underscoring his extensive and influential collaborative connections.

0.3 Marlon Brando

Marlon Brando's Local Clustering Coefficient is the highest at 0.351, indicating a very tight-knit group of co-stars. His Betweenness Centrality is 0.01989, and Closeness Centrality is 0.2272, both reflecting his central role in the network. His Degree Centrality is 0.01280, and his Eigenvector Centrality score of 0.04284 shows his substantial influence due to connections with other prominent actors.

0.4 Averages

The high average clustering coefficient of 0.9439 suggests a network with pronounced cliquishness, indicating a propensity for actors to cluster together.

The low average betweenness centrality of 0.0006186 implies that most actors do not frequently lie on the shortest path between others, signifying that a few actors may act as pivotal bridges in the network.

Furthermore, the average closeness centrality standing at 0.1426 reflects that actors are, on average, somewhat distant from one another within the network, underscoring the presence of disparate clusters or communities. The average degree centrality of 0.005018 indicates that most actors have worked with only a minor fraction of others, pointing to a network with a long-tail distribution of connections. Lastly, the average eigenvector centrality of 0.008084 suggests that most actors are not directly connected to the highly influential nodes in the network, which limits their relative influence. Collectively, these measures delineate a network characterized by tightly-knit groups with a few central actors significantly influencing the network's connectivity and information flow.