

Anish Sikhnam

Chukwuka Odigbo

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### Problem Set 4 Analysis

Who would you recommend as good and bad Bacon, in terms of degree and in terms of average separation? Justify, in comparison to others including Bacon himself.

In terms of degree, we would recommend someone with a high degree, or a high number of edges to/from a vertex, as a good Bacon – and vice versa. This is because whoever has a high degree has many immediate connections. This gives the person a much higher chance of being connected to many more people by virtue of their immediate connections, as compared to someone who has a low degree. Additionally, people with a high degree may also have a lower connection length, as compared to someone with a low degree.

In terms of average separation, we would recommend someone with a low average separation as a good Bacon – and vice versa. As someone with a lower average has a usually lower connection length between themselves and other people, they likely will be more directly connected compared to whoever has a high average. Again, this gives the person with a low average separation a much higher chance of being connected to many more people, with fewer connections.

When searching for someone with the highest degree as well as the lowest average separation, by using the d and the c methods we found that actor Gene Hackman had the lowest average separation, as well as the highest degree of 102. When using the u method and setting

Gene Hackman as the center of the universe, we found that he has an average separation of about 3.058, which is less than Kevin Bacon's average separation of about 3.281. Additionally, we found that Gene Hackman is connected to 7494/9235 actors, which is the same as Kevin Bacon (who is also connected to 7494/9235 actors). Because Gene Hackman has a lower average separation than Kevin Bacon, this makes him a better center of the universe than Bacon himself.