

Design and Analysis of Algorithms

10.3 Social Network Analysis

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10.3.2

- In a real-world social network, how do we find "communities" of people?
- E.g., the EECS Department, your soccer team, my extended family
- A community is a cluster of nodes: but how do we formalize this?
- If you wanted to find these groups, how would you do it?

As the professor mentioned, my first thoughts drifted towards strongly connected components. The issue with applying SCCs to this problem is multiple people from one community could be members of another community. So perhaps we need loosely connected components where the cardinality of connections to another community is depended on the number of connections to another loosely connected component.

If the number of connections connecting two loosely connected components is less than both of the components, then maybe that would define two communities. There can be overlap between the communities, but there shouldn't be so much overlap that they are one component.

10.3.6

Suppose you are given an adjacency matrix. How would you calculate the number of common neighbors that two nodes have?

I would count the values between the i_{nodeA} and i_{nodeB} row and the j_{nodeA} and j_{nodeB} column. Any values in the column and row should be common neighbors?