

Module 3 of E0 259, Data Analytics, August 2018

Community Detection

Lectures

[Lecture 1-3](#) (Rajesh Sundaresan)

Data set (Taken from Mark Newman's webpage)

[Dolphins](#) with due thanks to Lusseau et al. (2003) for compiling the data, and to Mark Newman for creating the file.

Unzip the .zip file to see two files, dolphins.txt (description) and dolphins.gml which contains an undirected social network of frequent associations between 62 dolphins in a community off Doubtful Sound, New Zealand. You can use the NetworkX package in Python to read the file.

Assignment 3

Due: 23:55 hrs on Monday 17 September 2018. Discussion is encouraged. But write your own code. Please comply with the ethics policy.

1. Use the Louvain method to identify the two communities. Provide a visualisation of the outcome so that the names of the dolphins, the network, and the two communities are clearly visible.
2. Identify the two communities by obtaining the Fiedler vector. Provide a picture similar to the above. Indicate the approach you have taken in light of the fact that the two communities are of different sizes.

You can use existing Python packages.