Detecting and evaluating communities in complex human and biological networks GREG MORRISON, L. MAHADEVAN, Harvard University School of Engineering and Applied Sciences — We develop a simple method for detecting the community structure in a network can by utilizing a measure of closeness between nodes. This approach readily leads to a method of coarse graining the network, which allows the detection of the natural hierarchy (or hierarchies) of community structure without appealing to an unknown resolution parameter. The closeness measure can also be used to evaluate the robustness of an individual node's assignment to its community (rather than evaluating only the quality of the global structure). Each of these methods in community detection and evaluation are illustrated using a variety of real world networks of either biological or sociological importance and illustrate the power and flexibility of the approach.

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Date submitted: 11 Nov 2011   Electronic form version 1.4