GTNA

Graph-Theoretic Network Analyzer

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Contents

1. Networks

* Canonical * Complete Graph * Ring * Star * Model * Barabasi Albert * De Bruijn * Erdos Renyi * Gilbert * Growing Network (GN) * Growing Network with Copying (GNC) * Growing Network with Re-direction (GNR) * Kleinberg * UnitDisc * Watts Strogatz * P2P * CAN * Chord * Gnutella04 * Gnutella06 * Kademlia * ODRI * Pastry * PathFinder * Symphony * Util * Readable File * Readable Folder * Readable List

2. Transformations

* Network Embedding * LMC * Swapping * Community Detection * Label Propagation * Modularity * Role Generation * Graph Drawings * Canonical Circular Crossing * Frick * Fruchterman Reingold * Melancon Herman * Six Tollis * Wetherell Shannon * Random ID Space * Chord ID Space * Plane ID Space * Ring ID Space * Lookahead List Generation * Partitioning * Giant Connected Component * Strong Connectivity Partition * Weak Connectivity Component * Spanning Tree * BFS * Degree * Random Graph With Same Degree Distribution * Remove Dead Nodes * Remove Largest Nodes * Remove Small Degree Nodes * Edges * Bidirectional

3. Routing Algorithms

* Flooding * Flooding * GreedyFlooding * Greedy * Greedy * Greedy Backtracking * Greedy Backtracking Extended * Greedy Next Best * Greedy Next Best Backtracking * Lookahead * Lookahead * Lookahead Min Via * Lookahead Sequential * TwoPhase * TwoPhase Greedy * TwoPhase Greedy Registration * TwoPhase Greedy Registration Multiple Realities * TwoPhase Lookahead * TwoPhase Lookahead Registration * TwoPhase Lookahead Registration Multiple Realities * etc * BubbleCast * Random Walk

4. Metrics

* general * m = multi-scalar * s = single-scalar * distributions = fractions (m), cdf (m), min (s), max (s), average (s), median (s) * for each metric: runtime (s) * clustering coefficient * local clustering coefficient (m) * clustering coefficient (s) * communities * size distribution (m+s) * degree distributiion * degree distribution (m+s) * in-degree distribution (m+s) * out-degree distribution (m+s) * # of nodes (s) * # of edges (s) * strong / weak connectivity * largest component (s) * fraction of largest component (s) * component size (m) * component size fraction (m) * roles * role distribution (m+s) * routing * routing hop count distribution (m+s) * routing hop count distribution absolute (m+s) * routing betweenness (m) * all routes (for later processing) * shortest paths * shortest path length distribution (m+s) * shortest path length distribution absolute (m+s) * local characteristic path length (m) * connectivity (s) * motifs * distribution of directed 3-node motifs (m+s) * distribution of undirected 4-node motifs (m+s) * network fragmentation * configurable node removal strategy * strong / weak connectivity over "time" (m+s) * rich club connectivity * rich club connectivity (m) * id space * distance distribution (m+s) * hops to neighbors (m+s) * binned representations (m+s)

Changelog

24.11.2011: initial document