Volatility of Communication Edges to construct Robust Trusted Spanning Forests

Optimisation Techniques for Computer Science

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Delay Tolerant MANETs - DTM
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Delay Tolerant MANETs - DTMs

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cooperative enforcement approaches

- enhance the robustness,
- the availability
- the overall throughput
Robust Trusted Spanning Forest

- ‘Trust’ and ‘Reputation value’ --> the cooperative level
- trust information --> strengthen the spanning forest within a DTM

How robust trusted spanning trees can be created?

- **G-TRUST**
- **G-TRUST BREAK**

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Mobility models

- Simple but unrealistic synthetic models (e.g. Random Waypoint)
- More realistic models should take into account
  - laws of physic (speed/direction change),
  - the environment (constrain movement to streets)
  - social behavior of user (habits, interests, etc.)
- Trace-based models

Mobility + radio propagation lead to dynamic topology
Dynamic graphs and associated metrics

- Dynamic graphs are required to represent MANETs and DTMS
- Allows to study the dynamics of a network with new metrics
  - Cumulated age
  - Volatility
  - Renewal rate

A dynamic graph represented as an evolutive graph

Many possible definitions for link stability

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Project objectives

- Study the volatility characteristic over the communication edge based on two mobility models: ‘Highway’ and ‘Shopping Mall’

- Find a stability threshold value of each specified mobility model to optimize the robustness of the constructed trusted spanning forest.
Prerequisites

- JAVA programming
- Basic background in algorithmic
- Basic background in graph theory
- Basic background in networking

- Project requires use of a network simulator and/or graph simulator:
  - Tool usage will be taught during project
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