NS3 Final Submission

The final submission includes the following things:

1. Varying Parameters Without Modifications (Task A)

Simulate the following networks as per assignment. You can use any topology you want. **You do not need to use your proposed modification/algorithm here**. You can use NS3's built-in components for this.

ID % 6	Wired	Wireless high-rate (e.g., 802.11) (static)	Wireless high-rate (e.g., 802.11) (mobile)	Wireless low-rate (e.g., 802.15.4) (static)	Wireless low-rate (e.g., 802.15.4) (mobile)
0		√		√	
1			√		√
2			√	√	
3	√				√
4		√			√
5	√			√	

In your simulation –

    a. The number of nodes needs to be varied as 20, 40, 60, 80, and 100

    b. Besides, you need to vary the following parameters –

        i. The number of flows (10, 20, 30, 40, and 50)

        ii. The number of packets per second (100, 200, 300, 400, and 500)

        iii. Speed of nodes (5 m/s, 10 m/s, 15 m/s, 20 m/s, and 25 m/s) [Only in case of having mobility]

        iv. Coverage area (square coverage are varying one side as Tx_range, 2 x Tx_range, 3 x Tx_range, 4 x Tx_range, and 5 x Tx_range) [Only in case of having static nodes only]

In all cases, you need to measure the following metrics and plot graphs –

    a. Network throughput

    b. End-to-end delay

c. Packet delivery ratio (total # of packets delivered to end destination/total # of packets sent)

d. Packet drop ratio (total # of packets dropped / total # of packets sent)

Note that, show the results of (c) and (d) in the layer you are working on your project.

2. Simulation with Proposed Modification (Task B)

You must show the trend of at least two performance metrics (throughput, goodput, end-to-end delay, delivery ratio, drop ratio, fairness measurement, energy consumption, or if any particular metric that is defined in your paper) varying at least one parameter (#nodes, #flows, #packet per second, speed, coverage area). A comparison of your proposed modification with baselines is expected.

Please note that here you are free to use any topology that would better demonstrate the claims of your paper. It is recommended you follow the topology that is adopted in the experiments in your paper if any.

You must show metrics that demonstrate the significant claims of your paper. For example, for an energy-efficient routing algorithm, you must show the energy consumption. For a congestion control algorithm claiming good fairness measures, you have to show the fairness index, and so on.

You also have to give a proper explanation of the outcomes of your result. (the results might not match with the paper, in these cases you need to do further experiments by yourself to determine the possible reasons).

3. Evaluation and Viva

In the 13th Week, you will report Task A and B to your supervisor. Also, you will be quizzed on your entire project workflow. Be prepared. The date and time of evaluation will be set by your supervisor. Note that you are not required to prepare any slides for this.

4. Final Report

You need to submit a report mentioning the following

a. Network topologies under simulation

b. Parameters under variation

c. Overview of the proposed algorithm

d. Modifications made in the simulator

e. Results with graphs (for Task A and B)

f. Summary findings explaining the results you found in Task A and Task B

5. Submission to Moodle

You have to submit the following in Moodle:

    a. Final report (.pdf)

    b. A folder containing all the **relevant source codes** of Task A and B (only the .cc and .h files you added/modified in your ns3 project, do not foolishly place the entire ns3 project)

    c. The paper you followed for your project (.pdf)

Put everything in a zip file. Rename the zip to your 7 digit student ID.

Submission deadline: **23 February 11.00 AM**

Any work done after the submission deadline will not be considered for grading.

6. Marks Distribution

Overview:

    Project Proposal - 3
    Group Presentation - 5
    Update 1 - 5
    Update 2 - 5
    Task A - 20
    Task B - 25
    Report - 20
    Viva - 15
    Proper Submission to Moodle - 2

    Total = 100

Breakdown:

Task A : (20 Marks)
    Measurement :
    throughput 4
    end to end delay 4
    packet delivery + drop 4
    Variation of nodes 2
    Variation of flows 2
    Variation of speed of nodes (mobility) 2
    Coverage area 2

Task B : (25 Marks)
    Implementation of proposed algorithm - 15
    Trend of two Metrics 2x5 = 10

Report : (20 Marks)

[For Both Task A & B]

Network Topology description - 2

Variation of Parameters - 1.5

Overview of Proposed Algorithm - 3

Modifications in Simulator to implement Algorithm - 3

Results & Explanation of Task A - 3.5

Results & Explanation of Task B - 7