**Congestion Control Fairness**

**Abstract**

Congestion Control (CC) is an important role of a connection oriented transport layer (Layer 4) protocol. CC is an End to End (E2E) mechanism that controls the intensity of the traffic an end-station injects into the network. In this project you will study different types of fairness via literature review and simulation on the NS3 cutting-edge network simulator. Quic is a secure general-purpose, (almost fully) encrypted, multiplexed, and low-latency transport protocol designed from the ground up to improve transport performance for HTTPS traffic. QUIC has recently (May 2021) became RFC standard (RFC 9000) and is expected to become the dominant transport protocol in the Internet over TCP. In the simulation part of this project you will study the fairness property of various Quic congestion control mechanisms in various situations.

**Project objective**

1. Describe and demonstrate and compare different mechanisms of congestion control fairness.

**Project overview**

1. Review recent literature and define types of fairness.
2. Ramp-up NS3 and run the tutorial.
3. Define the tests setup.
4. Run simulations and perform analysis of fairness.
5. Write project report, final presentation and a poster for the project.

**Project Milestones**

1. 02.03.2023 – CDR
   a. Theoretical Review
      i. Types of fairness
      ii. Congestion Control Mechanisms
   b. NS3 review (after running the tutorial)
      i. How can NS3 help us demonstrate different types of fairness?
      ii. What are the limitations of NS3?
   c. Workplan for the rest of the semester
      i. Goals
      ii. Schedule
2. 03.07.2023 Final Presentation
   a. PowerPoint Presentation (In person)
   b. Final Report – Draft
   c. Project Poster - Draft
3. 20.07.2023
   a. Final Report
   b. Project Poster

Notes
1. The above list is an estimate. Goals and tasks may be modified during the first few weeks of the semester.
2. General requirements for all LCCN Projects are specified at the lab website: https://lccn.cs.technion.ac.il/lab-courses/

Prerequisites:
1. Introduction to computer networks (236334) – Mandatory.

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