Postdoc and Master of Research positions Defragmentation of multi-layer elastic optical networks.

Professor Brunilde Sansò

brunilde.sanso@polymtl.ca

LORLAB (Laboratoire d'optimisation de réseau) et GERAD

Dpt de génie électrique, Polytechnique Montréal

August 30, 2023

1 The call

Within the framework of an important collaborative project with Ciena, we are looking for a Postdoc and for students interested in pursuing a Master of Research program.

2 The project

Elastic optical network technology (EON) is now part of telecommunications transport networks. EONs will be increasingly used in 5G access and transport because it allows great flexibility at the physical layer. However, the technology creates a new network problem which is the **spectrum fragmentation**. Fragmentation occurs when connections of various types leave the network, leaving holes of different sizes in the spectrum. Fragmentation reduces network capacity and also has a detrimental effect on performance at the higher layers (ethernet, IP) with possible impact on the applications.

In this Ciena-funded MITACS research project, we are studying several algorithmic aspects to avoid or to effectively solve the fragmentation problem taking into account the multi-layer nature of networks.

The algorithmic techniques used to deal with fragmentation problems need mathematical modeling, optimization, simulation and machine learning. There will also be sub-projects related to the programming of these algorithms in an SDN context.

3   Candidate's profile

- Excellent Judgment

- Interest in research in

    > communications network performance,
    >
    > optimization of communication networks,
    >
    > data analysis,
    >
    > machine learning,
    >
    > network programming.

- Excellent computer skills

- Python Experience

- Resourcefulness

- Very good academic average

- Capable of working in a team

- Experience in simulation, optimization, ML or SDN programming would be an asset.

4   Contact

Send your resume and transcript in pdf format to `brunilde.sanso@polymtl.ca` by writing `ciena2023` (as is) space `Postdoc` or `MSc.A.` (to indicate program of interest) as the subject of your message.