POLITECNICO DI TORINO

DISMA Dipartimento di Scienze Matematiche G. L. Lagrange

ECCELLENZA 2018 • 2022

Tuesday October 15, 2019 at 14:30
Politecnico di Torino, DISMA, Aula Buzano (third floor)

Leonardo CIANFANELLI

PhD student at Politecnico di Torino

Optimal intervention in traffic networks via effective resistance approximation

Prof. Giacomo Como introduces the seminar.

Abstract

We present an efficient algorithm to identify which edge should be improved in a traffic network to minimize total congestion.
Our main result is that, given any candidate edge, it is possible to approximate the change in congestion level obtained by changing the congestion coefficient by performing local computations and without computing the corresponding equilibrium. To obtain our main result, we derive a reformulation of our problem in terms of the effective resistance between two adjacent nodes, we suggest a new approach to approximate such effective resistance for a broad class of networks and we study the optimality of such procedure for recurrent graphs.
Finally, we provide simulations over representative networks as well as real traffic networks.

Biography

Leonardo Cianfanelli obtained his Master Degree in 2017 in Physics of complex systems with full marks cum laude at Università degli Studi di Torino. He is currently a PhD student at Politecnico di Torino under the supervision of Giacomo Como. From September 2018 to August 2019 he was visiting student under the supervision of Asu Ozdaglar at Massachussets Institute of Technology. His research is on game theory, dynamics over networks and traffic control.

Save the date for the next event: October 17, 2019
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