ANTOINE GLORIEUX

Antoine GLORIEUX is a PhD student of the laboratory SAMOVAR working at Télécom SudParis with Walid Ben-Ameur and José Neto. Prior to beginning the PhD program, Antoine graduated from the Université Pierre et Marie Curie with a Master's of Optimisation and Operational research and wrote his master's thesis about graph colouring problems. He is currently working on combinatorial optimization and graph theory. More specifically, his work concerns graph orientation problems. Antoine is also the proud father of the cutest 6 months old baby boy there ever was whith whom he tours the streets of Paris doing what he personally calls «strollerskating».

"On the most imbalanced orientation of a graph"

Abstract:
We study the problem of orienting the edges of a graph such that the minimum over all the vertices of the absolute difference between the outdegree and the indegree of a vertex is maximized. We call this minimum the imbalance of the orientation. The studied problem is denoted by MAXIM. We first characterize graphs for which the optimal objective value of MAXIM is zero. Next we show that MAXIM is generally NP-complete and cannot be approximated within more than 1/2 in polynomial time unless P = NP. Then we describe a polynomial-time approximation algorithm and an exact polynomial-time algorithm for cacti. Finally, two mixed integer linear programming formulations are presented along with strengtehning methods. Numerical results are given.