Séminaire GAMoC – 6 juin 2023 – Château des Muids

10h. Accueil café

10h15-11h, Jérôme Durand-Lose : *Fonctions récursives sur les mots. Complexité et définitions dépourvues de concaténations*
Nous reprenons l'étude des fonctions primitives récursives sur les mots. En particulier, nous nous concentrons sur ce qu'il est possible de faire sans utiliser la concaténation. Nous terminons pas montrer un résultat d'indécidabilité.

11h-11h45, Anthony Perez : *Un noyau quadratique pour l'Édition Trivialement Parfaite*
We consider the TRIVIALLY PERFECT EDITING problem, where one is given an undirected graph G=(V, E) and an integer parameter k and seeks to edit (add or delete) at most k edges from G to obtain a trivially perfect graph. Trivially perfect graphs are both chordal and cographs, and have applications related to the tree-depth width parameter and to social network analysis.
We provide a quadratic kernel for this problem, i.e., we reduce in polynomial time an input instance of arbitrary size to an equivalent instance of size O(k^2), improving on a previous cubic kernel.
(Work in progress with Maël Dumas)

Déjeuner

14h30 – 15h15, Nicolas Ollinger : *Global bounds for CA with locally bounded communications*
Convergent, bounded-change and freezing cellular automata (CA) share a common principle : they have bounded local communication (a finite number of event per cell) but no bound on the time interval between two events. We study the consequences on communication complexity for such CA. In particular, we show that the limit language of a bounded communication CA of dimension d has non-deterministic communication complexity at most $O(n^{d-1} \log(n))$. Despite this bound, we construct a 1D freezing CA whose limit set is not computable.
(Work in progress with M. Delacourt, P. Guillon, G. Richard and G. Theyssier)

15h15-16h : Ioan Todinca : *Energy-Efficient Distributed Algorithms for Synchronous Networks*
We study the design of energy-efficient algorithms for distributed models. Specifically, as a measure of complexity, we consider the maximum, taken over all the edges, or over all the nodes, of the number of rounds at which an edge, or a node, is active in the algorithm. We first show that every Turing-computable problem has a CONGEST algorithm with constant node-activation complexity, and therefore constant edge-activation complexity as well. However, we show that insisting on algorithms running in polynomially many rounds comes with a severe cost in terms of energy. Finally, we demonstrate the existence of a sharp separation between the edge-activation complexity and the node-activation complexity in the CONGEST model
(Joint work with Pierre Fraigniaud, Pedro Montealegre and Ivan Rapaport)

Pause café

16h30 : Discussion d'équipe

17h30 : Fin de la journée