

The integer programming group from the National University of General Sarmiento

Área de Computación, Instituto de Ciencias,
Universidad Nacional de General Sarmiento, Argentina

STIC-AmSud group meeting – Fortaleza 2013

The university



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The university



- It is a **new university**, established in 1993 together with several similar universities throughout the Greater Buenos Aires.
- It is also a **small university**, with some 5000 students.
- The students come from the surrounding areas, and most of them are the first university students from their respective families.

The university

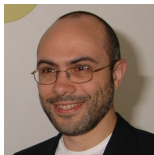


- The **computer science department** is in charge of a three-year academic degree in programming.
- We are currently starting a five-year degree program in computer science.

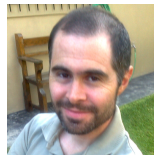
The integer programming group



Javier Marenco



Marcelo Mydlarz



Sebastián Guala



Diego Delle Donne



Mónica Braga



Javier Martínez
Viademonte

The integer programming group



Javier Marenco (jmarenco@ungs.edu.ar) works in polyhedral combinatorics, practical applications of integer programming, and a little in complexity issues.

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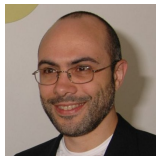


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Latest stuff:

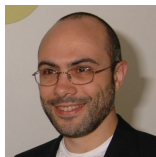
- Polyhedral characterizations of a lot-sizing problem with startup costs.
- Integer programming for scheduling production of corrugated boxes (2-SSCPsc problem).
- Computational complexity of the maximum common-edge subgraph problem over particular graph classes.
- Applications of integer programming to sports leagues scheduling and combinatorial auctions.
- Joint work with Diego, Javier M.V., Mónica, Marcelo and Sebastián.

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[Marcelo Mydlarz](mailto:mmydlarz@ungs.edu.ar) (mmydlarz@ungs.edu.ar) works in combinatorial optimization, theoretical computer science, computational geometry, and graph theory.

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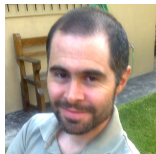


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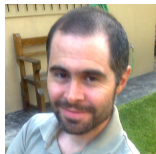
- A taxonomy that generalizes the 3-dimensional matching problem.
- A simple proof of the Hajnal-Szemerédi theorem and a polynomial-time algorithm to attain the partition.
- An incentive compatible stochastic auctions for the sponsored search setting.
- Variants of the inverse Voroni problem: given a Voronoi diagram, compute the set of sites that generate it.
- Joint work with Javier M. and Javier M.V.

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Sebastián Guala (sguala@ungs.edu.ar) works in simulation of agent-based models, soil sciences and, recently, in practical applications of integer programming.

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Latest stuff:

- Agent-based decision models, specially oriented to economical and social models of inductive learning in binary decisions.
- Heavy metals dynamics in the plant-soil interaction models. Models of accumulation of metals in plants growing in metal-polluted soils, aiming to developing effective phytoremediation strategies.
- An integer programming model for determining meals in a hospital.

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[Diego Delle Donne](mailto:ddelledo@ungs.edu.ar) (ddelledo@ungs.edu.ar) is a PhD student working in polyhedral combinatorics and applications of integer programming.

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Latest stuff:

- Searching for complete characterizations of polytopes associated to coloring problems with local constraints in particular graph classes.
- Integer programming model for assigning rooms to courses in the UBA Sciences School.
- Integer programming model and software application for salmon cages management, in Chile.
- Segmentation algorithm based on integer programming for the 2010 Argentine Census.

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Latest stuff:

- Families of valid inequalities based on “baskets” for the acyclic coloring polytope.
- Disjunctive ranks and anti-ranks of the known valid inequalities for the acyclic coloring polytope.
- Application of integer programming for scheduling the Argentine women’s volleyball league.

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Latest stuff:

- Implementation of local cuts for integer programming which do not follow the template paradigm.
- Valid inequalities for the maximum-leaf spanning tree problem.
- A survey and an experimental backtracking algorithm for the equitable coloring problem.
- Integer programming model for assigning rooms to courses in the UBA Sciences School.

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- Diego, Mónica and Javier MV: Finish our PhDs ...

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 - ④ Starting in April 2013 ... [you!](#)