Martín Gómez Ravetti, Dr.

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RESEARCH INTERESTS

Clinical Bioinformatics, Biomarkers Discovery, Systems Biology, Combinatorial Optimisation, Scheduling, Heuristics and Metaheuristics, Graph theory.

EDUCATION

Ph.D. Computer Science, May 2007. *Federal University of Minas Gerais*, Brazil

- Advisor: Geraldo Robson Mateus (UFMG)
- Co-Advisor: Panos M. Pardalos (Biomedical Engineering Program, McKnight Brain Institute, University of Florida)

M.Sc., Computer Science, Dec 2003. *Federal University of Minas Gerais*, Brazil

- Advisor: Geraldo Robson Mateus (UFMG)

B.A., Industrial Engineering, May, 2002. *National University of Rosario*, Argentina

HONORS, AWARDS AND GRANTS

National Council for Scientific and Technological Development (CNPq) DTI Fellowship, 2007. (3 month Research fellowship at UFMG).(Aprox: US$ 10,000.00)

National Council for Scientific and Technological Development (CNPq) Grant:CTINFO/MCT/CNPq n 11/2005 (PD&I -TI).(Aprox: US$ 100,000.00) Field: Algorithm Analysis and Computational Complexity. Project Coordinator: Geraldo Robson Mateus.

National Council for Scientific and Technological Development (CNPq) Graduate Research Fellowship, 2005. (Research year at the University of Florida). (Aprox: US$ 20,500.00)

National Council for Scientific and Technological Development (CNPq) Graduate Research Fellowship, 2004. (PhD.).(Aprox: US$ 35,000.00)

National Council for Scientific and Technological Development (CNPq) Graduate Research Fellowship, 2002. (M.S.).(Aprox: US$ 15,000.00)

ACADEMIA EMPLOYMENT HISTORY

The University of Newcastle, NSW, Australia

Research Associate   **September, 2007 - present**
ARC-Discovery Project - *Application of a novel exact combinatorial optimisation techniques and metaheuristics methods for problems in cancer research.* P.A. Moscato, R.J. Scott and M.A. Langston.

Catholic University of Minas Gerais, Brazil

Professor   **August, 2006 - August, 2007**
Information Systems Department

Federal University of Minas Gerais, Brazil

Professor - Substitute Position   **February, 2007 - August, 2007**
Computer Science Department

Professor - Substitute Position   **August, 2004 - July 2005**

Computer Science Department

Teacher Assistant   **May - June, 2002**
Graduate level course for Master and PhD. of Computer Science. Shared responsibility for lectures, exams, homework assignments, and grades.

Teacher Assistant   **May - June, 2002**
Undergraduate level course for Computer Science B.A. Shared responsibility for lectures, exams, homework assignments, and grades.

National University of Rosario, Argentina

Teacher Assistant   **May - June, 2002**
Undergraduate level course for Industrial Engineering B.A. Shared responsibility for homework assignments.

Teacher Assistant   **May - June, 2002**
Undergraduate level course for Industrial Engineering B.A. Shared responsibility for homework assignments.

STUDENT SUPERVISION	Rodrigo da Silva Soares (UFMG) - Final year project (so-advisor), current
	Mateus Rocha de Paula (UFMG) - MSc (co-advisor), current
	Mateus Rocha de Paula (UFMG) - Final year project (co-advisor), 2004
	Pedro Leite Rocha (UFMG) - Final year project (co-advisor), 2003

PROFESSIONAL ACTIVITIES

Referee for the journals:

- Journal of Global Optimization
- Journal of Combinatorial Optimization
- Optimization Letters
- Journal of heuristics
- GEPROS - Gestão da Produção, Operações e Sistemas

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS

4. P. Leite Rocha, **M. Gómez Ravetti**, G.R. Mateus, and P.M. Pardalos. Exact algorithms for a scheduling problem with nonrelated parallel machines and sequence and machine dependent setup times. `Computers & Operations Research (C&OR)`. v 35,n 4, pp. 1250-1264, April 2008.

3. M. Rocha de Paula, **M. Gómez Ravetti**, G.R. Mateus and P.M. Pardalos. Solving parallel machines scheduling problems with sequence-dependent setup times using variable neighborhood search Mateus Rocha de Paula; `IMA Journal of Management Mathematics (IMA-JMM)`. 18, pp. 101-115, 2007.

2. **M. Gómez Ravetti**, G.R. Mateus, P. Leite Rocha and P.M. Pardalos. Scheduling problem with non-related parallel machines, sequence dependent setups, due dates and eligibility constraints. `International Journal of Operational Research (IJOR)`, Vol. 2, No. 4, pp. 380 - 399, 2007.

1. G.R. Mateus, **M. Gómez Ravetti**, M. Cardoso de Souza, Tas Valeriano and Marcos Magalhães. Capacitated Lot Sizing and Sequence Dependent Setup Scheduling: An Iterative Approach for

Integration. Submitted for publication to Journal of Scheduling, 2007.

THESIS

2. M. Gómez Ravetti. Algorithms for a scheduling problem with parallel machines and sequence dependent setups. Doctoral dissertation, UFMG - Federal University of Minas Gerais, 2007.

1. M. Gómez Ravetti. Problemas de seqüenciamento com máquinas paralelas e tempos de Preparação dependentes da seqüência (Portuguese). Master's thesis, UFMG - Federal University of Minas Gerais, 2003.

PAPERS IN
PEER-REVIEWED
CONFERENCE
PROCEEDINGS

11. M. Gómez Ravetti, Mauricio C. Souza, Tas Valeriano, Marcos Magalhes.Integrating Capacitated Lot Sizing and Sequence Dependent Setup Scheduling.In XXXIX Simpsio Brasileiro de Pesquisa Operacional, 2007, Fortaleza. Anais do XXXIX SBPO, 2007. v. 1 (11 pp). (ISBN 1518-1731).

10. Luciana. P. Assis, **M. Gómez Ravetti**. Heurísticas Construtivas Aplicadas ao Problema de Roteamento de Veículos com Coleta e Entrega Simultâneas. In XXXIX Simpsio Brasileiro de Pesquisa Operacional, 2007, Fortaleza. Anais do XXXIX SBPO, 2007. v. 1 (12 pp). (ISBN 1518-1731).

9. M. Gómez Ravetti, F.G. Nakamura, C.N. Meneses, M.G.C. Resende, G.R. Mateus, and P.M. Pardalos. A hybrid metaheuristc for the permutation flow shop problem. International Symposium on Mathematical Programming. (Abstract) , Brazil, 2006.

8. M.R. de Paula, **M. Gómez Ravetti**, and Panos M. Pardalos, Abordagem Variable Neighborhood Search para o Problema de Seqüenciamento com Máquinas Paralelas e Tempos de Preparação Dependentes da Seqüência.In XXXVIII Simpósio Brazileiro de Pesquisa Operacional, (XXXVIII SBPO), Goiâ3.6+nia, Brazil, 2006. (ISBN 1518-1731).

7. Adriana A. Oliveira, **M. Gómez Ravetti**, and G.R. Mateus. Traffic engineering in mpls networks: Ars an adaptive routing scheme based on control charts. In 23o Simpósio Brazileiro de Redes de Computadores - SBRC 2005, Fortaleza, Ceará, Brazil, 2005.(ISBN 8588442817).

6. Adriana A. Oliveira, **M. Gómez Ravetti**, and G.R. Mateus. Using control charts for traffic change's detection in mpls networks. In Mascots, 2004, Volendam, Holanda, 2004. (POSTER).

5. P. Leite Rocha, **M. Gómez Ravetti**, and G.R. Mateus. The meta- heuristic grasp as an upper bound for a branch and bound algorithm in a scheduling problem with non-related parallel machines and sequence-dependent setup times. In EU/ME Workshop, Nottingham, Inglaterra, 2004.

4. M. Gómez Ravetti, G.R. Mateus, and P. Leite Rocha. Problema de sequenciamento com máquinas paralelas e tempos de preparação de máquinas dependentes de sequência. In XXXVI Simpósio Brazileiro de Pesquisa Operacional, (XXXVI SBPO), São João del Rei, 2004, Brazil, 2004. (ISBN 1518-1731).

3. M. Gómez Ravetti, G.R. Mateus, and P. Leite Rocha. Programación de tareas con máquinas paralelas no relacionadas, puestas a punto dependientes de la secuencia y restricciones de elegibilidad. In Congreso Latino-Iberoamericano de Investigación de Operaciones y Sistemas (CLAIO 2004), Havana, Cuba, 2004. (ISBN: 9592611661).

2. M. Gómez Ravetti and G.R. Mateus. Problemas de scheduling considerando máquinas paralelas y tiempos de preparación de máquinas dependientes de la secuencia. In Escuela Latinoamericana de Investigación Operativa (ELAVIO 2004), Montevideo, Uruguay, Feb 2004.

1. M. Gómez Ravetti and G.R. Mateus. Sequênciamento de tarefas com máquinas paralelas, permitindo atrasos e com tempos de preparação de máquina dependentes da sequência. In XXXV Simpósio Brazileiro de Pesquisa Operacional, (XXXV SBPO), Natal, Brazil, 2004. (ISBN 1518-1731).

Talks and Conferences presentations	• Integrated production planning problems (2007) - XXXIX SBPO - (Brazilian Symposium on Operational Research)
	• Heuristics and metaheuristics (2007) - Catholic University of Minas Gerais
	• Hybrid algorithms for Scheduling Problems (2006) - XXXVIII SBPO - (Brazilian Symposium on Operational Research)
	• Course on Simulation techniques (2005) - Federal University of Minas Gerais (UFMG) Special topic on Results analysis (8 hs)
	• General talk on optimization techniques (2005) - University President Antônio Carlos (UNIPAC)
	• Exact algorithms for Scheduling Problems (2005) - XXXVI SBPO - (Brazilian Symposium on Operational Research)
	• Parallel machine scheduling Problems (2004) - ELAVIO 2004 - (Latinamerican summer school of Operations Research)
	• Production planning and scheduling problems (2004) - CLAIO 2004 - (Latinamerican Conference of Operations Research)
	• Parallel machine scheduling Problems (2003) - XXXV SBPO - (Brazilian Symposium on Operational Research)
	• Multi-criteria Optimization (National University of Rosario - UNR) (2002)

Papers finished and in preparation

4. **M. Gómez Ravetti** and Pablo A. Moscato. **Robust Alzheimer biomarkers**. Paper ready for submission. **Brief Description:** We report here the results obtained after applying our techniques on a special data set, consisting in a total of 259 archived plasma samples (Nat. Med. 13, 1359-1362 (2007)). Instead of using probabilistic methods we use optimization techniques and we were able to find 6 new signatures, all with less than 12 genes and with accuracy near to 90%. Our signatures also present good performances when using traditional algorithms as PAM to evaluate the prediction output.

3. **M. Gómez Ravetti** and G.R. Mateus. Lagrangean relaxation for a parallel machine scheduling problem. Working Paper, 2007.

2. **M. Gómez Ravetti**, R. Soares, M.G.C. Resende, G.R. Mateus, and P.M. Pardalos. Generalized flow shop problem: Lower bounds, integer programming formulation, and a metaheuristic based on grasp. Working Paper, 2007.

1. M. J. Hirsch, **M. Gómez Ravetti**. Relationships between Problems in Discrete and Continuous Optimization. Working Paper, 2007.

Languages

English (Fluent)
Portuguese (Fluent)
Spanish (Native)

Professional Experience and Research projects

Centre for Bioinformatics, Biomarker Discovery & Information-Based Medicine - The University of Newcastle

Research group   **September, 2007 - present**
Research Theme: bioinformatics.

Lapo Research Group (UFMG) - OPTIMAL

Research group   **July, 2005 - present**
Research Theme: Logistic, scheduling and production planning problems.
Grant: National Council for Scientific and Technological Development (CNPq).

Instrumental Rosario, Rosario, SF Argentina

Entrepreneurial project **Mar, 1995 - July, 2001**
The company produces surgical instruments and medical implants. My obligations included : logistic, new products development;

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Distinguished Professor
Biomedical Engineering Program, McKnight Brain Institute
Co-Director, Center for Applied Optimization
University of Florida.
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