



August 29th, 2008
I Workshop on Research and Development Efforts – **Graduate Programs** in
Computer Science and Computational Mathematics of the ICMC/USP
and **Computer Science of the DC/UFSCar**

UFSCar Database Group (UFSCar DB)

SÃO
CARLOS, SP

Members

- ◆ Marilde Terezinha Prado Santos
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- ◆ Mauro Biajiz
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- ◆ Ricardo Rodrigues Ciferri
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General Description of the UFSCar Database Group

The UFSCar Database Group (UFSCar DB) focuses on:

- the developing of new algorithms and index structures for complex data types.
- the storage, manipulation and retrieval of geographical and spatial data, semi-structured data (such as XML), biological data (such as genome) and data stored in warehouses.
- the study of the application of ontologies for efficient query processing and data integration.
- the developing of data mining algorithms based on fuzzy-logic and ontologies.



Main Research Projects

◆ Index Structures for Complex Data

- ◆ An Spatial Bitmap-based Index for Geographical Data Warehouses.
Student: Thiago Siqueira.
Supervisors: Ricardo Ciferri and Valéria Times (UFPE).
- ◆ Fast Index for Large Stored Ontology Graphs.
Student: Marcus Rogério.
Supervisors: Mauro Biajiz and Maria Teresa Marques Novo.
- ◆ High Performance Specialized Data Structure for Molecular Simulation.
Student: Eduardo Leal.
Supervisors: Mauro Biajiz and Luís Carlos Trevelin.



Main Research Projects

◆ Information Retrieval

- ◆ Context-aware Information Retrieval on an Ubiquitous Learning Environment.

Student: Diogo Martins.

Supervisor: Mauro Biajiz.

◆ Data Mining

- ◆ Knowledge Discovery Applied on Data Obtained by Automatic Annotation in the Learning Domain.

Student: Rodrigo Bela.

Supervisors: Marilde Santos and Mauro Biajiz.

- ◆ Extracting Non-Redundant Generalized Association Rules.

Student: Rafael Miani.

Supervisors: Mauro Biajiz and Marilde Santos.



Main Research Projects

◆ Ontologies and Query Processing

- ◆ Fuzzy Meta-ontology for Representation of Fuzzy Information in Ontologies.

Student: Cristiane Yaguinuma.

Supervisors: Mauro Biajiz and Marilde Santos.

- ◆ FOQuE - DISFOQuE Systems.

Students: Cristiane Yaguinuma and Gustavo Afonso.

Supervisors: Mauro Biajiz and Marilde Santos.

- ◆ Annotation Management of Biosequences Based on the Association Between Ontologies and XML Schemas.

Student: Marcus Vinícius Teixeira.

Supervisors: Mauro Biajiz and Ricardo Ciferri.



Researchers



Marilde Terezinha Prado Santos

University Experience

From 2002 on - Assistant Professor, Computer Science Department, UFSCar.

Education

Ph.D. (2000), Computational Physics, University of São Paulo (USP), Brazil.

M.Sc. (1994), Computer Science, Federal University of São Carlos (UFSCar), Brazil.

B.Sc. (1991), Computer Science, Pontifical Catholic University of RS (PUCRS), Brazil.

Research Interests

Data warehousing, data mining, data integration, information retrieval, ontologies and semantic web.

Grad Students Co-Supervised: 4 M.Sc.

Grad Students on going: 2 M.Sc.



Researchers



Mauro Biajiz

University Experience

From 2006 on – Associate Professor, Computer Science Department, UFSCar.
1993-2006 – Assistant Professor, Computer Science Department, UFSCar.

Education

Ph.D. (1996), Computational Physics, University of São Paulo (USP), Brazil.
M.Sc. (1993), Computer Science, University of São Paulo (USP), Brazil.
B.Sc. (1987), Mathematics, University of São Paulo State (UNESP), Brazil.

Research Interests

Bioinformatics, XML and semi-structured data, data integration, ontologies and semantic web, data mining and moving objects databases.

Grad Students Supervised: 16 M.Sc.

Grad Students on going: 4 M.Sc. and 2 Ph.D.



Researchers



Ricardo Rodrigues Ciferri

University Experience

From 2006 on – Assistant Professor, Computer Science Department, UFSCar.

2002-2006 – Assistant Professor, Department of Informatics, UEM (State University of Maringá).

1996-2002 – Lecturer, Department of Informatics, UEM (State University of Maringá).

Education

Ph.D. (2002), Computer Science, Federal University of Pernambuco (UFPE), Brazil.

M.Sc. (1995), Computer Science, State University of Campinas (Unicamp), Brazil.

B.Sc. (1992), Computer Science, Federal University of São Carlos (UFSCar), Brazil.

Research Interests

Data warehousing, spatial databases, data integration, bioinformatics and biological databases.

Grad Students Co-Supervised: 1 M.Sc.

Grad Students Supervised: 2 M.Sc.

Grad Students on going: 2 M.Sc.



Graduate Students

◆ Concluded

◆ M.Sc. – 22

◆ On Going

◆ M.Sc. – 8

◆ PhD. – 2



Funded Research Projects

- ◆ TIDIA - AE Phase 2: Information Technology in the Development of the Advanced Internet.
Lince-UFSCar/COC. Funded by FAPESP. 2006-2008.
- ◆ Web-PIDE: An Open Platform of Integration and Evaluation of Educational Data
UFSCar/UFMS. Funded by CAPES/INEP. 2007-2010.
- ◆ Metagenoma of Aquatic Bacteria of Solimões River
UFSCar. Funded by CENPES/Petrobrás. 2008-2009.



Industrial and Academic Partners and Joint Initiatives

The UFSCar DB, through extension projects as the firming with **IBM and Microsoft**, interacts with the software industry.

These companies yield **hardware, software and grant scholarship** for students.

New **joint initiatives** aims at applying the results of data warehousing and data mining research on medical data, such as sickle cell disease data.



Interactions with other Research Groups

Database and Software Engineering

- USP-ICMC
- UFMS
- UFPE
- PUC-Rio

Biology and Medicine

- USP-RP
- UEM



Relevant Publications

- ❖ SANTOS, H.F. ; SANTANA, L.H.Z.; MARTINS, D.; SOUZA, W.L.; PRADO, A.F. ; BIAJIZ, M. An Ubiquitous Environment for Medical Education. In: ACM Symposium on Applied Computing, 2008, Fortaleza, CE, Brazil.
- ❖ SANTOS, H.F.; SANTANA, L.H.Z.; BIAJIZ, M.; PRADO, A.F. ; SOUZA, W.L. Context-aware Information Retrieval on an Ubiquitous Medical Learning Environment. In: ACM Symposium on Applied Computing, 2008, Fortaleza, Brazil.
- ❖ CIFERRI, R.R.; CIFERRI, C.D.A.; CARÉLO, C.C.M; TRAINA JUNIOR, C. nsP-index: A Robust and Persistent Index for Nucleotide Sequences. In: Proceedings of the 12th East-European Conference on Advances in Databases and Information Systems, 2008, p.1-14.
- ❖ CIFERRI, C.D.A.; CIFERRI, R.R.; FORLANI, D.T.; TRAINA, A.J.M.; SOUZA, F.F. Horizontal Fragmentation as a Technique to Improve the Performance of Drill-Down and Roll-Up Queries. In: ACM Symposium on Applied Computing; Track: Database Theory, Technology, and Applications, 2007, p. 494-499.
- ❖ YAGUINUMA, C.A.; BIAJIZ, M.; SANTOS, M.T.P. Sistema FOQuE para Expansão Semântica de Consultas Baseada em Ontologias Difusas. In: Simpósio Brasileiro de Banco de Dados, 2007, João Pessoa, PB, Brasil.



Relevant Publications

- ◆ SANTANA, L.H.Z.; MARTINS, D.S.; PERLIN, C.B.; PRADO, A.F.; SOUZA, W.L.; BIAJIZ, M. Adaptação de Páginas Web para Dispositivos Móveis. In: Simpósio Brasileiro de Sistemas Multimídia e Web, Gramado, RS, Brasil. Anais do 13o Webmedia, 2007.
- ◆ FIORINI, A.; GOUVEIA, F.S.; SOARES, M.A.M.; STOCKER, A.J.; CIFERRI, R.R.; FERNANDEZ, M.A. DNA Bending in the Replication Zone of the C3 DNA Puff Amplicon of *Rhynchosciara americana* (Diptera: Sciaridae). *Molecular Biology Reports*, Springer Netherlands, v. 33, n. 1, p. 71-82, 2006.
- ◆ LOMBARDO, L.R.; BIAJIZ, M.; PRADO, A.F. A component's framework based on the MVC pattern for the integration of data and tools on the molecular biology domain. In: IEEE International Conference on Information Reuse and Integration, 2006, Waikoloa, USA.
- ◆ MELLO, C. A. S. ; MELLO, R. ; SANTOS, M. T. P. ; SENGER, L. ; YANG, L . A New Method for Classifying and Searching Software Components by using a Self-organizing Neural Network Architecture. In: IEEE International Conference on Granular Computing, 2006, Atlanta.
- ◆ GAVIOLI, A.; BIAJIZ, M.; MOREIRA, J. MIFLIR: A Metric Indexing and Fuzzy Logic-based Image Retrieval System. In: IEEE International Workshop on Managing Data for Emerging Multimedia Applications, 2005, Tokyo, Japan. p. 1178.

