

Leonardo Max Batista Claudino

Pattern Recognition and Image Processing Lab
Computer Science and Engineering
Department

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Education

B.Sc. Computer Science, Universidade Federal de Minas Gerais (UFMG), 2002.
M.Sc. Electrical Engineering, Universidade Federal de Minas Gerais, 2005.
Master's Thesis: Unsupervised Text Fragments Segmentation for License Plate Location.
Advisor: Dr. Antônio de Pádua Braga
Co-advisor: Dr. Arnaldo de Albuquerque Araújo
Computer Science Ph.D. candidate, Michigan State University.
Advisor: Dr. Anil K. Jain

Research Experience

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|---|--------------------------------------|
| Undergraduate Research Scholarship (CNPq) | 09/1999–08/2000 |
| Digital Image Processing Group | Computer Science Department/UFMG |
| Getting familiar to image processing and computer vision concepts. Investigating the best descriptive image features to pollen grain and coffee bean sample images acquired from microscopes. | |
| Undergraduate Research Scholarship (CNPq) | 09/2000–08/2001 |
| Digital Image Processing Group | Computer Science Department/UFMG |
| Applying wavelet feature representation and self-organizing feature maps to extract low-level texture classes from images. | |
| Undergraduate Research Scholarship (CNPq) | 09/2001–03/2002 |
| Digital Image Processing Group | Computer Science Department/UFMG |
| Combining low-level texture classes into high-level pollen grain and other materials' ones for content-based retrieval. | |
| Capstone Project | 2001 |
| Vision and Robotics Lab | Computer Science Department/UFMG |
| Development of a vision system to allow the Nomad 200 robot reading numbers in office plates, by searching for a fixed-length sequence of potential digits and forwarding zoning features to a previously trained multi-layer perceptron neural classifier. | |
| Research Assistantship | 06/2003–06/2005 |
| Metasys Linux Lab/International Syst S.A | Computer Science Department/UFMG |
| Coordination of undergraduate students on the investigation and development of new features for the Metasys server (an SME-based commercial Linux), including load balancing, remote monitoring, authentication and a searching engine solution. | |
| Technical Consultant | 10/2004–12/2005 |
| iVision S.A. | Universidade Federal de Minas Gerais |
| Development of a machine vision solution to detect inverted connectors on printed circuit boards. | |

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Research Experience (cont.)

Master of Science 2003–2005
Computational Intelligence and Technology Lab Electrical Engineering Graduate
Department/UFGM
Development of an unsupervised text segmentation approach based on wavelet vertical details clustering and a spatial domain analysis. The first purpose of the work was to help detecting license plates in vehicle images.

Technical Consultant 10/2005–07/2007
Quali Consult S.A. Official Press of the State of Minas Gerais
Research and development of a fingerprint verification algorithm.

Research Assistantship 09/2007–now
Michigan State University Computer Science and Engineering Department
Working on automatic detection of pedestrians based on video and range sensor data.

Teaching Experience

Undergraduate Assistant 1999
Computer Science Department Universidade Federal de Minas Gerais
Course: Algorithms and Data Structures I.

Lecturer 2000
Computer Science Department Pontifícia Universidade de Minas Gerais
Title: Neural Networks: Theory and Applications –Duration: 100 minutes.

Teacher 2004–2005
Information Systems Undergraduate Course Faculdade Cenecista de Sete Lagoas
Courses: Artificial Intelligence Applied to Information Systems and Capstone Project.

Capstone Project Co-advisor 2003–2006
Computer Science Department Universidade Federal de Minas Gerais
Main areas: Image Processing, Computer Vision and Computational Intelligence.

Employment

Java Programmer 06/2002–04/2003
Infostrata S.A. Belo Horizonte, MG/Brasil
Development of a Java viewer for satellite and aerial images.

Extra-curricular Activities

Organizing Committee
Workshop of Image Treatment (WTI) <http://www.npdi.dcc.ufmg.br/>
The WTI is an annual event promoted by the Digital Image Processing Group of the CS department at UFGM – a local meeting that receives students, researchers and people of public and private interests. It has a call for papers, offers tutorials and has digital proceedings.

Conference Reviewer 2002
IV Brazilian Symposium on Geoinformatics <http://www.geoinfo.info/>
An annual Brazilian forum concerning geographic information science.

Extra-curricular Activities (cont.)

Conference Reviewer 2003, 2004 and 2006
IEEE Brazilian Symposium on Computer Graphics and Image Processing (SIBGRAPI) <http://www.sibgrapi.ufam.edu.br/index.php>
Considered the most important Brazilian meeting in Computer Graphics, Image Processing, and Computer Vision.

Conference Reviewer 2006
Workshop in Computing and Applications of the XXXIII Integrated Seminar on Software and Hardware www.ufms.br/sbc/semish/
Annual scientific forum sponsored by the Brazilian Computer Science Society (SBC).

Conference Reviewer 2007
IEEE International Conference on Document Analysis and Recognition (ICDAR) <http://www.icdar2007.org/>
Biennial international conference concerning Document Analysis and Understanding. Sponsored by the International Association for Pattern Recognition (IAPR).

On-line Demonstrations

Fingerprint Enhancement Demo: The implementation of a fingerprint enhancement algorithm based on gabor filtering. It is an intermediate result of the fingerprint verification system that is under development. Implemented and deployed in C++ using OpenCV Intel lib. Running under Apache 2 on a Debian system.

Available at:

<http://35.9.26.45:8080/~claudino/research/fingerprint-enhancement/demo/>

Text Fragments Segmentation Demo: The implementation of the text segmentation method developed during the Master of Science. The system was entirely written in Matlab 6.5/R13 and deployed with the Matlab's web server (matweb + matlabserver tools). Running under Apache 2 on a Debian system.

Available at:

<http://35.9.26.45:8080/~claudino/research/unsupervised-text-segmentation/demo/>

Awards and Distinctions

One-year Technological-Industrial Development Fellowship granted by the National Council for Scientific and Technological Development of the Brazilian government - DTI/CNPq, from 05/2003 to 04/2004.

Best Image Processing and Computer Vision paper award at the Workshop of Theses and Dissertations on Computer Graphics and Image Processing of the IEEE XIX Brazilian Symposium on Computer Graphics and Image Processing - WTDCGPI/SIBGRAPI, Manaus-AM, Brazil, October of 2006.

CAPES-Fulbright Doctoral Fellowship, Fall 2008 (4 years).

Publications

Araújo, A. de A., Claudino, L.M.B., Oliveira, R.R., & Guimarães, S.J.F., *Pattern recognition and image description by suitable textural information*, Proceedings of the XIII Brazilian Symposium on Computer Graphics and Image Processing - SIBGRAPI, IEEE Computer Society Press, Gramado-RS, Brazil, ISBN no. 0 7695 0878 2, 2000, pp 340.

Araújo, A. de A., Oliveira, R.A.R., Claudino, L.M.B., Guimarães, S.J.F., & Bastos, E., *Unsupervised image segmentation based on wavelet textural analysis and neural networks*, Proceedings of the IBERAMIA-SBIA 2000 Workshops, I Workshop on Artificial Intelligence and Computer Vision - WAICV, Atibaia-SP, Brazil, ISBN no. 85 901664 1 4, 2000, pp 77-81.

Araújo, A. de A., Claudino, L.M.B. & Oliveira, R.A.R., *Pollen grain information retrieval by neural representation*, Proceedings of the XIV Brazilian Symposium on Computer Graphics and Image Processing - SIBGRAPI, IEEE Computer Society Press, Florianópolis-SC, Brazil, ISBN no. 0 7695 1330 1, 2001, pp 398.

Araújo, A. de A., Perroton, L., Oliveira, R.R., Claudino, L.M.B., Guimarães, S.J.F., & Bastos, E., *Nonlinear features extraction applied to pollen grain images*, Proceedings of the IS&T/SPIE Electronic Imaging 2001, San Jose-CA, USA. In: Dougherty, E.R. & Astola, J.T. (Editors), Nonlinear Image Processing and Pattern Analysis XII, SPIE, ISBN no. 0 8194 3982 7, vol. 4304, 2001, pp 35-45.

Claudino, L.M.B., Braga, A. de P., Araújo, A. de A. & Oliveira, A.F., *Unsupervised segmentation of text fragments in real scenes*, Proceedings of the 13th. International Conference on Image Analysis and Processing - ICIAP, Cagliari, Italy, Lecture Notes in Computer Science, Springer, ISBN 3 540 2886 94, vol. 3617, 2005, pp 399-406.

Claudino, L.M.B., Text fragments segmentation for license plate location, Master's Thesis (in Portuguese), Graduate Program of Electrical Engineering of Universidade Federal de Minas Gerais - PPGEE/UFGM, Belo Horizonte-MG, Brazil, 2005.

Claudino, L.M.B., Braga, A. de P., Araújo, A. de A., *Text fragments segmentation for license plate location* (in Portuguese), CD-ROM proceedings of the Workshop of Theses and Dissertations on Computer Graphics and Image Processing of the IEEE XIX Brazilian Symposium on Computer Graphics and Image Processing - WTDCGPI/SIBGRAPI, Manaus-AM, Brazil, 2006. Extended (English) version to appear in the Brazilian Journal of Theoretical and Applied Computing.