

CURRICULUM VITAE

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1 Education

- BSc in Electrical Engineering (Electronics), Faculty of Electrical Engineering, Federal University of Pernambuco (UFPE), Recife, PE, Brazil, Dec, 1988.
- MSc in Electrical Engineering (Image Processing), Faculty of Electrical and Computing Engineering, University of Campinas (UNICAMP), Campinas, SP, Brazil, Feb, 1993.
- PhD in Electrical Engineering (Image Processing), Faculty of Electrical and Computing Engineering, University of Campinas (UNICAMP), Campinas, SP, Brazil, Dec, 1996.
- Habilitation (“livre docência”) in Image Processing, Institute of Computing, University of Campinas (UNICAMP), Dec, 2003.

2 Academic positions

- Assistant Professor, Institute of Computing, University of Campinas (Feb 1998 to Dec 2003).
- Associate Professor, Institute of Computing, University of Campinas (since Dec, 2003).
- Associate Director, Institute of Computing, University of Campinas (Sep 2006 to Apr 2007).
- Coordinator of the Graduate Program in Computer Science, Institute of Computing, University of Campinas (Jul 2009 to Jun 2011).
- Professor, Institute of Computing, University of Campinas (since Aug, 2011).

3 Research interests

- Image and video processing and analysis.
- Interactive and model-based image segmentation.
- Medical and biological image analysis.
- Machine learning and pattern recognition.
- Graph algorithms and dynamic programming.
- Volumetric visualization.
- Content-based image retrieval.
- Probabilistic and fuzzy object modeling.
- Image registration.
- Biometrical image analysis.

4 Teaching experience

- Deep Learning.
- Information Technology.
- Introduction to Algorithms and Computer Programming.
- Algorithms, Data Structures, and File Structures.
- 3D Image Processing and Visualization.
- Volumetric Visualization.
- Design of Image Descriptors.
- Introduction to Computer Graphics.
- Introduction to Image Processing.
- Machine Learning and Pattern Recognition.
- Image Analysis.
- Image Processing using Graphs.
- Medical Image Visualization.
- Remote sensing image processing.
- Techniques to Automate the Diagnosis of Enteroparasites

5 Academic services

- Journals

Senior Area Editor: IEEE Signal Processing Letters (2016-2020). **Associate Editor:** Pattern Recognition (2022-), IEEE Signal Processing Letters (2014-2016). **Guest editor:** Pattern Recognition Letters (2008-2010). **Editor:** Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization (2012-). **Editor:** Computerized Medical Imaging and Graphics (2006-2010). **Reviewer:** International Journal of Computer Vision, International Journal of Computer Assisted Radiology and Surgery, International Journal of Pattern Recognition and Artificial Intelligence, Multimedia Systems, IEEE Trans. on Computer Graphics & Applications, Computer Vision and Image Understanding, Pattern Recognition Letters, Pattern Recognition, IEEE Trans. on Medical Imaging, IEEE Trans. on Image Processing, Computer & Graphics, SPIE Optical Engineering, IEEE Trans. on Pattern Analysis and Machine Intelligence, Journal of Mathematical Imaging and Vision, Medical Image Analysis, Visual Computer, Pattern Analysis and Applications Journal, SPIE Electronic Imaging, Graphical Models, International Journal of Information Technology, IEEE Transactions on Information Technology in Biomedicine.

- Funding agencies

Advisory committee: Advanced Institute for Artificial Intelligence (AI2, Scientific Council, since 2019), São Paulo Research Foundation (FAPESP, since 1998 and in Computer Science Coordinator Committee, since 2014), National Council for Research and Development (CNPq, since 1999), Research Foundation of the Institute Mackenzie (2007–2008), Chilean Government Commission for Scientific and Technological Development (FONDECYT, CONICYT, 2008).

- Conferences

Program chair: Conf. on Graphics, Patterns, and Images (20th SIBGRAPI, 2007). **Tutorial chair:** Conf. on Graphics, Patterns, and Images (22nd SIBGRAPI, 2009). **Advisory committee:** Conf. on Graphics, Patterns, and Images (CEGRAPI, 2008-2011, President 2020-2023), Intl. Symp. Computer Methods in Biomechanics and Biomedical Engineering (CBMME 2018). **WTD chair:** Conf. on Graphics, Patterns, and Images (26th SIBGRAPI, 2013). **Latin America Liaison** for ICIAP 2025. **Program/Technical committee:** BRACIS (2022), ICPR (2020, 2022 as associate editor and session chair), IAPR Technical Committee 18 on Discrete Geometry & Mathematical Morphology, since 2019, SPIE Medical Imaging - Image-Guided Procedures, Robotic Interventions, and Modeling (2008–2015), SPIE Medical Imaging - Image Processing (since 2016), 3DOR (2018,2019), ISBI (2007-2009, 2021 and 2023 as associate member), EarthVision, CVPR (2017-2020), CSBC-CTD (2016,2017), CIARP (2016), MICCAI (2015), VipImage (2015-2017), CompImage (2014), Intl. Conf. on Computational and Experimental Biomedical Sciences (ICCEBS) in 2013, MICCAI workshop on Bio-Imaging and Visualization for Patient-Customized Simulations in 2013, Intl. Conf. of Computer Analysis of Images and Patterns (CAIP, 2013,2015,2019), Conf. on Graphics, Patterns, and Images (SIBGRAPI, since 2003), International Symposium on Mathematical Morphology (2007), Conference on Information and Knowledge Management (2006,2008), SPIE Intl. Symp. on Multispectral Image Processing and Pattern Recognition (2009), Workshop on Interactive Multimodal Pattern Recognition in Embedded Systems (2011), International Symp. on Visual Computing (Special Track on Computational Bioimaging, 2009).

6 Honors and awards

- **Keynote speaker:** Intl. Symposium on Medical Information Processing and Analysis (XVII SIPAIM 2021). The German workshop on Medical Image Computing – Bildverarbeitung für die Medizin (BVM 2021), 25th Iberoamerican Congress on Pattern Recognition (CIARP 2021), 21st Intl. Conf. On Discrete Geometry for Computer Imagery (DGCI, ESIEEE Paris, 2019), 29o. Conf. On Patterns, Graphics, and Images (SIBGRAPI, São José dos Campos, 2016), Conf. on Computational Vision and Medical Image Processing (VIPIMAGE, Tenerife, 2015), International Symposium of Mathematical Morphology (ISMM, Rio de Janeiro, 2007), 26o. Brazilian Colloquium of Mathematics (Rio de Janeiro, 2007), 16th International Conference on Digital Signal Processing (DSP, Santorini, 2009), 15th Iberoamerican Congress on Pattern Recognition (CIARP, São Paulo, 2010). IX Brazilian Workshop of Computer Vision (WVC, Rio de Janeiro, 2013).

- **Research awards:** UNICAMP Inventor Award 2020 and 2022 in the category “Licensed Technology”, UNICAMP Inventor Award 2018 in the category “Granted Patent”, Academic excellence “Zeferino Vaz” in 2014 by UNICAMP. Best journal paper of 2012 in Pattern Recognition, Academic Excellence in 2006, 2011, 2016, and 2020 by the Institute of Computing - UNICAMP, Fellowship Grants for Research Productivity since 1999 by the National Council for Research and Development (CNPq), UNICAMP Inventor Award 2011 in the category “Licensed Technology”, and UNICAMP Inventor Award 2012 in the category “Licensed Technology”.
- **PhD and MSc work awards:** Best PhD works in the Conf. on Graphics, Patterns, and Images (SIBGRAPI): Samuel Martins (2021), Thiago Spina (2016), Priscila Saito (2015), and João Paulo Papa (2009). Second Best PhD work in SIBGRAPI: Paulo Miranda (2010) and Jefersson dos Santos (2013). Best MSc work in SIBGRAPI: Jordão Bragantini (2022) e Fernanda Andaló (2008). Best PhD work in the Conference of the Brazilian Computer Society (CSBC): Felipe Bergo (2009, with honorable mention from CAPES) and Ricardo Torres (2005).
- **Conference paper awards:** The best student paper award (Bioimaging 2020), honorable mention on short paper (EuroVis 2016). Best results in the MOBIO face recognition competition of the Intl. Conf. on Biometrics (ICB 2013), honorable mention of the best student paper in 2010 by the Conference on Conference on Graphics, Patterns and Images (SIBGRAPI, student Thiago Spina), the five best papers in 2009 by the XIV Brazilian Remote Sensing Symposium (SBSR), Honorable mention poster award in 1999 during SPIE Medical Imaging.
- **Senior member of IEEE and SPIE.**

7 Publications

References

7.1 Journals

- [1] F.F.A. Pavarin, J.A. Fracarolli and A.X. Falcão. Biospeckle laser for assessing tomatoes ripeness indexes. *Revista Ciencia Agronomica*, doi: 10.5935/1806-6690.20240022, vol. 55, e20207677, pages 1-14, 2024.
- [2] F.C. Belém, I.B. Barcelos, L.M. João, B. Perret, J. Cousty, S.J.F. Guimarães, and A.X. Falcão. Novel Arc-Cost Functions and Seed Relevance Estimations for Compact and Accurate Superpixels. *Journal of Mathematical Imaging and Vision*, doi: 10.1007/s10851-023-01156-9, vol. 65, pp. 770-786, 2023.
- [3] B.C. Benato, A.X. Falcão and A.C. Telea. Measuring the quality of projections of high-dimensional labeled data. *Computer & Graphics*, doi: 10.1016/j.cag.2023.08.023, vol. 116, pp. 287–297, 2023.

- [4] V.C. Stefano, S.H.N. Loiola, B.M. dos Santos, F.A. Soares, S.L. Rosa, C.T.N. Suzuki, K.D. Bresciani, E. Sabadini, A.X. Falcão, and J.F. Gomes. Effects of hypertonic solutions on two species of human intestinal parasites during fecal examination. *Future Microbiology*, doi: 10.2217/fmb-2022-0055, 18(3), pp. 197–203, 2023.
- [5] L. de M. Joao, L.R. Proença, S.H.N. Loiola, S.V. Inácio, B.M. dos Santos, S.L. Rosa, F.A. Soares, V.C. Stefano, D. Osaku, C.T.N. Suzuki, K.D.S. Bresciani, J.F. Gomes, and A.X. Falcão, Toward automating the diagnosis of gastrointestinal parasites in cats and dogs, *Computers in Biology and Medicine*, doi 10.1016/j.compbiomed.2023.107203, vol. 163, pages 107203, 2023.
- [6] B.C. Benato, A.C. Telea, and A.X. Falcão. Deep Feature Annotation by Iterative Meta-Pseudo-Labeling on 2D Projections, *Pattern Recognition*, doi: 10.1016/j.patcog.2023.109649, vol. 141, pages 109649, 2023, in press.
- [7] S.V. Inacio, J.F. Gomes, A.X. Falcão, D.R.R. da Silva, W.B. Nagata, B.M. dos Santos, F.A. Soares, S.N. Loiola, A.N. Benitez, S.L. Rosa, K.D.S. Bresciani. Extending TF-Test to the diagnosis of gastrointestinal parasites of humans and animals, *Veterinaria Italiana*, doi: 10.12834/VetIt.2040.10928.1, 58(2), pp. 143–149, Dec 2022.
- [8] Soares, F.A., dos Santos, B.M., Rosa, S.L., Loiola, S.H.N., Stéfano, V.C., Proença, L.R., Suzuki, C.T.N., Sabadini, E., Bresciani, K.D.S., Falcão, A.X. and Gomes, J.F., Detection of intestinal parasites in human fecal samples using dissolved air flotation. *Tropical Medicine & International Health*, doi: 10.1111/tmi.13827, vol. 27, no. 12, pp. 1044-1052, Dec 2022.
- [9] S. Pati, U. Baid, . . . , A.X. Falcão, S.B. Martins, B.C.A. Teixeira, F. Sprenger, D. Menotti, . . . , S. Bakas. Federated Learning Enables Big Data for Rare Cancer Boundary Detection. *Nature Communications*, doi: 10.1038/s41467-022-33407-5, vol. 13, no. 7346, pages 1-17, 2022.
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7.3 Book organization

- [344] Optimum-Path Forest Theory, Algorithms, and Applications. A.X. Falcão and J.P. Papa (eds), Academic Press, ISBN 9780128226889, 1st Edition - January 6, 2022, <https://www.sciencedirect.com/book/9780128226889/optimum-path-forest>.

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- [346] Tutorials of SIBGRAPI 2009: XXII Brazilian Symp. on Computer Graphics and Image Processing. Eds. A.X. Falcão and Sinésio Pesco, Rio de Janeiro, RJ, Brazil, October 11-14, 80 pages, 2009, IEEE, ISBN 978-1-4244-4979-8, DOI 10.1109/SIBGRAPI-Tutorials.2009.1.
- [347] Proceedings of SIBGRAPI 2007: XX Brazilian Symp. on Computer Graphics and Image Processing. Eds. A.X. Falcão and H.Lopes, Belo Horizonte, MG, Brazil, October 7-10, 336 pages, 2007, DOI: 10.1109/SIBGRAPI.2007.1, ISBN 978-0-7695-2996-7.

8 Patents and Software Registration

1. J.F. Gomes, A.X. Falcão, E. Sabadini, S.L. Rosa, C.T.N. Suzuki. Mistura para Obtenção de Sistema Aquoso Bifásico (SAB) Específico Aplicado na Obtenção de Esfregaço Fecal, seu Processo de Obtenção, Processo de Obtenção de Sistema Aquoso Bifásico (SAB) Específico e Processo de Aplicação do Sistema Aquoso Bifásico (SAB) Específico em Exame Parasitológico de Fezes (EPF). Patente: Privilégio de Inovação. Número do registro: PI10202101636, Instituto Nacional da Propriedade Industrial (INPI) Depósito: 18/08/2021, **licensed technology in 2021**.
2. J.F. Gomes, A.X. Falcão, C.T.N. Suzuki, F.F.T. Freitas. Procedure for Enrichment of Fecal Samples of Interest for Submission to the System (Computerized Equipment) for the Identification of Human and Animal Gastrointestinal Parasites, Assistant in Diagnosis of Parasitic Diseases. Patente: Privilégio de Inovação. Número do registro: PCT/BR2021/05050, Patent Cooperation Treaty (PCT). Depósito: 18/11/2021, Suíça. Immunocamp Ciência e Tecnologia Ltda. e UNICAMP, pedido INPI BR 10 2020 023751 9, Depósito 20/11/2020, Publicação 07/06/2022, **licensed technology in 2021**.
3. J.A. Fracarolli, A.X. Falcão, F.F.A. Pavarin, and Y.T. Wu. Software para captura de pontos RGB-D por Kinect Xbox 360 para aplicação em biospeckle. Registro de Software, INPI BR512019002155-0, data de publicação: 06/06/2018, data de criação: 06/06/2018, Linguagem C#, Expedido em: 08/10/2019.
4. B.M. dos Santos, J.F. Gomes, C.T.N. Suzuki, e A.X. Falcão. Processo Operacional para Aplicação de Método de Pesquisa em Microscopia Óptica de Amostra de Material Biológico, Notadamente Fezes e Afins, com Resultados de Natureza Qualitativa e Quantitativa com Fator de Conversão de Ovos por Grama de Fezes (OPG). INPI, BR 10 2016 014787 5, depósito 22.06.16, Immunocamp Ciência e Tecnologia Ltda. e UNICAMP, **licensed technology in 2019**.
5. S.V. Inácio, K.D.S. Bresciani, J.F. Gomes, C.T.N. Suzuki, e A.X. Falcão. Composição Corante Padronizada Aplicada em Processo Operacional para Pesquisa em Microscopia Óptica de Amostra de Material Biológico, Notadamente Fezes e Afins, com Resultados de Natureza Qualitativa para Identificação de Parasitos Intestinais, e Processo Resultante. INPI, BR 10

2016 014786 7, depósito 22.06.16, Immunocamp Ciência e Tecnologia Ltda. e UNICAMP, **licensed technology in 2019**.

6. J.F. Gomes, F.A. Soares, A.X. Falcão, E. Sabadini, e C.T.N. Suzuki. Dispositivo de Flotação e o seu uso. INPI, BR 10 2015 032563 0, depósito 22.12.15, Immunocamp Ciência e Tecnologia Ltda. e UNICAMP, **licensed technology in 2019**.
7. A. Souza, L.A. Ray, A.X. Falcão. Quantitative Method for 3-D Bone Mineral Density Visualization and Monitoring. US patent, application number 20150348259, issued on June 20th, 2014, published on December 3rd, 2015.
8. A. Souza, L.A. Ray, A.X. Falcão. Detection of Tooth Fractures in CBCT Image, US patent, issued on 2013-07-22 (US13947369), published on 2014-10-23 (US20140314291A1), granted on 2018-05-15 (US9972083B2).
9. D. Yang, A. Souza, L.A. Ray, A.X. Falcão. Metal Artifacts Reduction for Cone Beam CT using Image Stacking, US patent, application number 20150178917, issued on December 19th, 2014, published on June 25th, 2015.
10. A.X. Falcão, J.F. Gomes, S.H. Shimizu and C.T.N. Suzuki. Método de Preparação de Amostra Coproparasitológica Fecal e Composição Clarificante. INPI, PI 0905833-8, depósito 15.10.09, PCT/BR2010/000340, Prot. 018100037856, depósito 08.10.10, classificação internacional G01N 33/483, carta patente expedida 02/10/2018.
11. A.X. Falcão, C.T.N. Suzuki, J.F. Gomes, J.P. Papa, L.C.S. Dias, e S.H. Shimizu. Sistema para Diagnóstico de Parasitos Intestinais por Análise Computadorizada de Imagens e Uso do Referido Sistema. INPI, PI 0802292-5, submetida em 23 de Julho de 2007.
12. A.X. Falcão, C.T.N. Suzuki, J.F. Gomes, J.P. Papa, L.C.S. Dias, e S.H. Shimizu. A System for Diagnosing Intestinal Parasites by Computerized Image Analysis. PCT/BR2007/000272, submetida em 08 de Outubro de 2007, aprovada na íntegra em 5 de Junho de 2008, WO 2008/064442 A2. INPI, PI 0605465-0, depósito 30.11.2006, classificação internacional G01N 33/483, carta patente expedida 31/07/2018.

9 Graduate students

- PhD (scholarship grants included):

1. Renato de O. Stehling. Efficient representation and retrieval of images from large heterogenous databases, with Mario Nascimento (Univ. of Alberta), PhD, 1999-2002, FAPESP Grant 98/12899-6.
2. Ricardo da S. Torres, Management of spacial data and images for developing environment applications, with Claudia Bauzer Medeiros (IC-UNICAMP), PhD, 2000-2004, FAPESP Grant 01/02788-7, the best thesis in 2005 by the Brazilian Society of Computing (SBC).
3. Felipe P.G. Bergo, Segmentation of cortical dysplastic lesions in MR-images, PhD, 2004-2008, CAPES, the best thesis in 2009 by the Brazilian Society of Computing (SBC) and honorable mention in 2010 of the best thesis in Computer Science by CAPES.

4. João Paulo Papa, Supervised pattern classification by optimum-path forests, PhD, 2005–2008, CAPES, the best PhD thesis in SIBGRAPI 2009.
5. Leonardo M. Rocha, Clustering by Optimum-Path Forest and its application to Image Analysis, with Luis Meloni (FEEC-UNICAMP), PhD, 2005–2008, CNPq.
6. Jancarlo F. Gomes, Diagnosis of human intestinal parasites by automatic image analysis, IB-UNICAMP, PhD, 2005–2008, CAPES.
7. Paulo A.V. de Miranda, Discrete model for object recognition and delineation, PhD, 2006–2009, FAPESP Grant 05/59808-0, the second best PhD thesis in SIBGRAPI 2010.
8. Fábio Cappabianco, Classification of white/gray matter in MR-images by optimum-path forests, with Guido Arajo (IC-UNICAMP), PhD, 2006–2010, FAPESP Grant 05/59902-7.
9. Jefersson Alex dos Santos, Semi-automatic classification of remote sensing images, with Ricardo Torres (IC-UNICAMP), Sylvie Philipp-Foliguet (ENSEA, UCP), Philippe-Henri Gosselin (ENSEA, UCP), PhD, Cotutelle UCP-UNICAMP, 2009–2013, FAPESP Grant 2008/58528-2, the second best PhD work in SIBGRAPI 2013.
10. André Tavares da Silva, Content-based image retrieval using relevance feedback and optimum-path forest classifier, with Leo Pini Magalhaes (FEEC-UNICAMP), PhD, 2009–2011, CNPq.
11. Priscila Tiemi Maeda Saito, Active learning with applications to the diagnosis of parasites, with Pedro Rezende, PhD, 2010–2014, CNPq 552559/2010-5, best PhD work in SIBGRAPI 2015.
12. Giovani Chiachia, Learning Person-Specific Face Representations, with Anderson Rocha (IC-UNICAMP), PhD, 2010–2013, FAPESP 2010/00994-8.
13. Thiago Vallin Spina. Interactive Segmentation of Objects in Image and Video using Graphs and Fuzzy Models of Content Knowledge. IC-UNICAMP. FAPESP 2009/11908-8, 2011/01434-9, 2010–2015, best PhD work in SIBGRAPI 2016.
14. Paulo Eduardo Rauber. Visual Analytics applied to Image Analysis: From Segmentation to Classification, with Pedro Rezende (IC-UNICAMP), Alexandru Telea (RuG), Jos Roerdink (RuG), PhD, Cotutelle Univ. of Groningen-UNICAMP, CAPES, FAPESP 2012/24121-9, and Ubbo Emmius grants, 2012–2017.
15. Ivan Mingireanov Filho. Determination of Arenite and Carbonate Tortuosity by Optimum Path Forest, with Alexandre Campana Vidal (Petroleum Engineering, UNICAMP), PhD, ANP, 2013–2017.
16. William Paraguassu Amorim. Semi-Supervised Learning by Optimum-Path Forest. Computação, UFMS & UFG, with Marcelo Henriques de Carvalho, 2013–2016.
17. Samuel Botter Martins. Unsupervised Brain Anomaly Detection in MR Images. IC-UNICAMP, advisor: A.X. Falcão, co-advisor: A. Telea (RuG and Utrecht, Netherlands), 2015–2020, Best PhD work in SIBGRAPI 2021.
18. John Edgar Vargas Muñoz . Machine Learning applied to Open Geographical Data, CAPES, FAPESP 2016/14760-5, FAPESP-BEPE 2017/10086-0 with Devis Tuia (Wageningen Univ., Netherlands), 2015–2019.

19. Leonardo de Melo João. Adaptive Flyweight CNNs for Parasite Detection and Identification. IC-UNICAMP, CNPq, Immunocamp Ciência e Tecnologia, co-advisor: Jancarlo F. Gomes (FCM-UNICAMP), 2021–.
 20. David Aparco Cardenas. Iterative Pseudo-Labeling for Building Convolutional Neural Networks using Deep Semi-Supervised Learning, advisor: P.J. de Rezende, co-advisor: A.X. Falcão, 2021–.
 21. Felipe de Castro Belém. Towards an Agnostic Superspel Segmentation Framework. IC-UNICAMP and Université Gustave Eiffel (UGE), co-advisors: Jean Cousty and Benjamin Perret (UGE), and Silvio Guimarães (PUC-MG), CNPq, CAPES, 2020–.
 22. Bárbara Benato. Visual Active Learning guided by Feature Projections. CNPq, FAPESP 2019/10705-8, FAPESP 2022/12668-5, co-advisor: A. Telea (RuG and Utrecht, Netherlands), IC-UNICAMP, 2019–.
 23. Isabela Borlido Barcelos. Feature Learning from Image Markers by using Graph Analysis. PUC-Minas, orientador: Silvio J.F. Guimarães, coorientador: A.X. Falcão, 2023–.
 24. Azael de Melo e Sousa. Human-Assisted Design of Convolutional Encoders for Pulmonary Anomaly Analysis in CT Images of the Thorax. IC-UNICAMP, 2018–2023.
 25. Italos Estilon de Souza. Building Convolutional Neural Networks from Image Markers. ANP, IC-UNICAMP, 2019–.
 26. Matheus Abrantes Cerqueira. Interactive Construction of Convolutional Networks for Semantic Segmentation. IC-UNICAMP, 2023–.
- MSc (scholarship grants included):
 1. Giulliano P. Carnielli, A fast approach for digital perspective volume rendering, MSc, 1998–1999, FAPESP 98/06535-1.
 2. Augusto C. Vannini, 3D visualization in medicine using holographic stereograms, with Cândido Xavier (State Univ. of Maringá), MSc, 1998–2000.
 3. Elisangela de A. Rodrigues, Deformable models for medical image segmentation, MSc, 1998–2000, CAPES.
 4. Bruno S. da Cunha, Design of image operators using the image foresting transform, MSc, 1999–2001, FAPESP 99/10100-3.
 5. Leonardo M. Rocha, Shell-rendering with shear-warp factorization, MSc, 2000–2002.
 6. Felipe P.G. Bergo, Interactive 3D image segmentation, MSc, 2002–2004, CAPES, the best PhD work in SBC 2009 and honorable mention by CAPES.
 7. Romaric Audigier, 3D segmentation and visualization of magnetic resonance images, with Roberto Lotufo (FEEC-UNICAMP), MSc, 2002–2004.
 8. Fabio Cappabianco, A hardware architecture for the image foresting transform, with Guido Arajo (IC-UNICAMP), MSc, 2004–2006, FAPESP Grant 03/11673-4.
 9. Paulo A.V. de Miranda, Image segmentation by the image foresting transform, MSc, 2004–2006, FAPESP Grant 03/09793-1, the best MSc work in 2006 by IC-UNICAMP.

10. Celso T.N. Suzuki, Image segmentation of human intestinal parasites, MSc, 2005-2007, FAPESP Grant 04/11218-8.
11. Fernanda A. Andalo, Shape descriptors based on tensor scale, with Ricardo Torres (IC-UNICAMP), MSc, 2005-2007, CNPq, the best MSc work in 2008 in SIBGRAPI.
12. Fernanda Favretto, 3D image registration of the human brain, MSc, 2007-2009, FAPESP Grant 07/53608-5.
13. Luiz Fernando Pinto, Asymmetry Analysis of the lateral ventricles from MR-images, MSc, 2006-2008.
14. Maira Saboia da Silva, Clustering of pixels by optimum-path forest and its applications in image segmentation, MSc, 2009-2011, FAPESP 2010/04936-2.
15. Cesar Castelo Fernandez, Supervised learning algorithms by optimum-path forest, with Pedro Rezende (IC-UNICAMP), Msc, 2009-2001, CNPq.
16. Juliana Barboza de Carvalho. Evaluation of a new technique (TF-Test Modified) for the diagnosis of intestinal parasites, with Jancarlo Ferreira Gomes (IB-UNICAMP), MSc, CAPES, 2011-2013.
17. Ivan Mingireanov Filho. Image segmentation of rock fragments using optimum-path forest, with Alexandre Campana Vidal (Petroleum Engineering, UNICAMP), MSc, ANP, 2011-2013.
18. Renzo Phellan. Medical Image Segmentation using Statistical and Fuzzy Object Shape Models. MSc, CNPq, 2013-2014.
19. Nikolas Moya. Interactive Segmentation of Multiple 3D Objects in Medical Images by Optimum Graph Cuts. MSc, CAPES e FAPESP 2013/17991-0, 2013-2015.
20. Samuel Martins. A Fast and Robust Negative Mining Approach for User Enrollment in Face Recognition Systems. MSc, with Giovanni Chiachia, Samsung, 2013-2015.
21. John Edgar Vargas. Contextual superpixel-based active learning for remote sensing image classification. MSc, with Jefersson dos Santos (UFMG), CNPq, 2013-2015.
22. Alan Zanoni Peixinho. Supervised Learning of Image Features with Convolutional Neuronal Network under Data Constraints. CAPES, MSc, 2014-2017.
23. Bianca Martins dos Santos. Validation of the technique TF-Test Quantified for the diagnosis of the *schistosoma mansoni*, with J.F. Gomes. IB-UNICAMP, 2013-2015.
24. Felipe Augusto Soares. A New Tool for the Detection of Enteroparasites using the Flootation Principle, with Jancarlo Ferreira Gomes. IB-UNICAMP, 2014-2016.
25. Azael de Melo e Sousa. Lung and Traquea Segmentation in CT-images of the Thorax. CAPES, 2015-2017.
26. Adán Echemendía Montero. Divide-and-Conquer Clustering Approaches based on Optimum-Path Forest. CAPES, 2015-2018.
27. Renzo Phellan Aro. Combined Segmentation and Hemodynamic Analysis of Cerebrovascular Structures using Arterial Spin Labeling. University of Calgary, Scholarship Hotchkiss Brain Institute, with Nils Daniel Forkert, 2016-2019.

28. Alexandre Yukio Yamashita. Finding Neuroimage Biomarkers for the Diagnosis of Alzheimer, with Neucimar Jerônimo Leite, 2015–2017.
29. Felipe Lemes Galvão. Hierarchical Image Segmentation based on Recursions of the Iterative Spanning Forest. Funded by Immunocamp Ciência e Tecnologia, IC-UNICAMP, 2017–2020.
30. Bárbara Caroline Benato. Data Annotation Guided By Feature Projection, FAPESP 2016/25776-0, CAPES, FAPESP 2017/25327-3 with A. Telea (Univ. of Groningen), 2017–2019.
31. Elvis Rusnel Capia Quispe. Learning non-maximum suppression to improve lung nodule detection in CT images. CNPq, 2018-2020.
32. Felipe Belém. Superpixel Generation using Object-Based Iterative Spanning Forest, with Silvio Guimarães (PUC-MG), 2018–2020.
33. Carolina Cuba. Quantitative and Automated Diagnosis of Eggs of *Schistosoma mansoni*. IC-UNICAMP, with Jancarlo Gomes, 2018–2020.
34. Leonardo de Melo João. A framework for iterative saliency estimation on multiple image domains. IC-UNICAMP, CNPq, 2018–2020.
35. Fernanda Adimari Pavarin. Tridimensional Reconstruction of Tomatoes with Data Integration from Laser Biospeckle. FEAGRI-UNICAMP, with Juliana Fracarolli, 2019–2020.
36. David Aparco Cardenas. A Novel Connectivity-based Clustering Algorithm for Semi-supervised Learning, with P.J. de Rezende, 2019–2021.
37. Jordão Bragantini. Interactive Image Segmentation: From Graph-based Algorithms to Feature-Space Annotation, 2020–2021, best MSc work in SIBGRAPI 2022.
38. Isabela Borlido Barcelos. A Survey on the State-of-the-Art Superpixel Segmentation. PUC-Minas, with Silvio J.F. Guimarães, 2021–2022.
39. Matheus Abrantes Cerqueira. User-Assisted Filter Estimation and Selection for Brain Tumor Segmentation. IC-UNICAMP, 2021–2023.
40. Felipe Crispim da Rocha Salvagnini. Improving Neural Networks from Image Markers for Brain Tumor Segmentation, IC-UNICAMP, 2022–.
41. Taylla Milena Theodoro. Towards Detection of Malignant Mesothelioma from 4D Magnetic Resonance Images of the Thorax, FAPESP 2022/03754-5, FAPESP 2022/14507-9 with Kevin Blyth (Univ. of Glasgow), IC-UNICAMP, 2021–.
42. André Igor. Latent Fingerprint Identification using Convolutional Neural Networks. IC-UNICAMP, Griaule, 2022–.
43. Marcelo Luís Rodrigues Filho. Combining Convolutional Neural Networks with Image Foresting Transform for Parasite Detection and Segmentation. IC-UNICAMP, 2023–.
44. Gilson Junior Soares. A Study on Adaptive Decoding for Convolutional Networks, IC-UNICAMP, 2023–.

10 Research projects as PI

1. Data Science for Smart Industry. Applied Research Center, FAPESP 2023/14427-8, with J.A. Cuminato (ICMC-USP) and colleagues from USP, UNICAMP, UNESP, AI2 and SENAI-SP, 2024–.
2. Building Image-based Decision Systems under the Expert’s Control. CNPq 304711/2023-3, research productivity level A, 2024–.
3. Graph-based Analysis and Understanding of Image, Video and Multimedia Data. CAPES/STIC-AMSUD 88881.878870/2023-01 with Silvio Guimarães (PUC-MG) and colleagues from different countries, 2024–.
4. Machine Learning in graph-based segmentation and analysis. CNPq 442950/2023-3, with Silvio Guimarães (PUC-MG) and colleagues from different countries, 2024–.
5. Data processing and analysis through graph-based strategies, with Silvio Guimarães (PUC-MG) and colleagues from different countries, 2023–2024.
6. PREDICT-Meso (PRE-malignant Drivers Combined with Target-Drug validation in Mesothelioma; <https://www.predictmeso.com/>), the Cancer Research UK, Glasgow Centre, in Scotland, with Kelvin Blyth and collaborators from several institutions in Europe and PUC-RS, 2022–.
7. Feature Extraction and Matching of Latent Digital Fingerprints, Griaule LTDA, 2022–.
8. Processing and Analysis of Images and Videos based on Graphs, CNPq Universal 407242/2021-0, with S.J.F. Guimarães (PUC-MG) and collaborators from USP and ESIEE (France), 2022–2023.
9. AnImaLS: Annotation of Images on a Large Scale: What can machines and specialists learn from the interaction?, as coordinator, with colleagues from UNICAMP, USP, UNESP, Upenn (USA), Utrecht Univ. (Netherlands), WVU (USA), EPFL (Switzerland), and Jadavpur Univ. (India), Thematic FAPESP 2014/12236-1, 2017-2023.
10. Interactive Machine Learning for Image Annotation on a Large Scale, individual research productivity fellowship, level 1A, CNPq 303808/2018-7, 2019-2024.
11. CIDIA-19: Data Science and Artificial Intelligence Against CODID-19, FAPERGS, with João Comba, UFRGS (responsible), and several other collaborators from UNICAMP, UFRGS, and Hospitals in Porto Alegre, RS, 2020-2021.
12. HiMMD: Hierarchical Graph-based Analysis of Image, Video, and Multimedia Data, CAPES/COFEC 933/19, with Silvio Guimarães, PUC-Minas (responsible) and several other collaborators from UFMG, ESIEE, INRIA, and IRISA, France, 2019-2024.
13. Construction and Validation of Digital Outcrop Models, with Luiz Gonzaga da Silveira Jr. and Maurício Roberto Veronez (Unisinos), Caroline Lessio Cazarin (CENPES-Petrobrás), and other collaborators from several universities in Brazil, ANP, 2019–2022.

14. Efficient algorithms for max-norm optimization in image analysis and computer vision. Joint project with Filip Malmberg (Uppsala Univ.), FAPESP-SPRINT 2019/08759-2, 01/09/2019 a 28/02/2023.
15. Computational Models for Learning, Representing, and Annotating Image Content. CNPq 302970/2014-2, category 1B, 2015–2019.
16. Image Annotation in Large Databases. CNPq 479070/2013-0, Call MCT/CNPq 14/2013, 2013–2016, joint project.
17. Visual Computing in Biomedicine and Health. Call PRP/PRPG: Integrated Laboratories of Research. UNICAMP, 2013–2016.
18. Pattern Analysis in Images using Graphs and Fuzzy Interest Object/Class Models. CNPq 303673/2010-9, category 1C, 2011–2015.
19. Lightweight Robust Face Recognition. Samsung, Corea, 2012–2013.
20. 3D Image Analysis of Plant Root Systems for Genotype-Fenotype Associations. FAPESP 2011/03110-6, 2011 – 2012.
21. Processing, visualization and analysis of MR-images of the human brain to study epilepsy, Joint project with colleagues of the Faculty of Medical Sciences, UNICAMP, FAPESP Grant 03/13424-1, 2005–2009.
22. Machine Learning and Pattern Recongition in Images by Optimal-Path Forests, CNPq 481556/2009-5, 2009-2011.
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