

# Jonathan Lima

## Objectives

Computer science PhD focused in multimedia signal and biomedical image processing. Looking for a opportunity in research and development, signal processing engineering, data science, gaming development or a postdoc. Particularly interested in work on applications in biomedical imaging, multimedia signal processing, computer vision or natural sciences.

## Education

- Jun 2018–Jan 2019 **University of Texas at El Paso (UTEP)**,  
*Electrical and Computer Engineering Department*,  
PhD Interchange period.
- 2014–2019 **University of Brasilia (UnB)**,  
*Computer science department*, Computer Science PhD.  
Title: Digital filtering methods in compressed sensing for magnetic resonance imaging reconstruction
- 2012–2014 **University of Brasilia (UnB)**,  
*Computer science department*, Computer Science Master's.  
Title (translated): Per-pixel mirror-based measuring: A new method for high-speed video acquisition
- 2008–2011 **University of Brasilia (UnB)**,  
*Computer science department*, Computer Science Bachelor.  
Title (translated): Application of the constant-Q Transform with fixed window length in the mutiple pitch recognition in audio signals.

## Experience

- August 2020–  
August 2021 **Assistant Colaborator Researcher**, AI.LAB, FGA - UNB.  
Machine Learning Researcher acting in the classification of legal documents.
  - Develop, maintain and document Python code.
  - Write scientific papers.
  - Coordinate a small research team.
- June 2011–Jan 2014 **Software Developer**, ITAE, CDT - UNB.  
Developer of Batalha ITAE, a educational game for entrepreneurship learning.
  - Develop, maintain and document the game software, using C/C++, SVN and Qt.
  - Laboratory maintenance, monitoring of the games sessions.
  - Audio sequences editing for the animations.
  - Full time during June 2011 – January 2012, part time during Feburary 2012 – January 2014.
- Various **Faculty teaching assitant**, UNIVERSITY OF BRASILIA.  
Part time faculty teaching assistant many times during undergrad and grad courses, in different disciplines.
  - Mar 2008 – Jun 2009, Differential equations.
  - Aug 2010 – Nov 2010, Mathematical physics.
  - Mar 2011 – Jun 2011, Audio synthesis.
  - Aug 2011 – Nov 2011, Complex calculus.
  - Mar 2013 – Jun 2013, Multimedia signal processing.
  - Aug 2014 – Nov 2014, Image processing.
- Feb 2008–  
Jul 2008 **High school teaching assitant**, ALUB, TAGUATINGA, DF.  
Part time maths and physics teaching assistant.

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## Journal Publications

- 2021 **Leveraging effectiveness and efficiency in Page Stream Deep Segmentation.**, *Braz, F. A.; da Silva, N. C.; Lima, J. A. S.*, Engineering Applications of Artificial Intelligence, v. 105, p. 104394, 2021., <https://www.sciencedirect.com/science/article/abs/pii/S0952197621002426>.
- Help developing the ideas and methods and the computational implementation in Python/Pytorch.
  - Participate performing the experiments and writing the paper.
- 2020 **Isotropic and anisotropic filtering norm-minimization: A generalization of the TV and TGV minimizations using NESTA**, Lima, J.A.S., da Silva, F.B., von Borries, R., Miosso, C.J., Farias, M.C.Q., Signal Processing: Image Communication.
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.
- 2017 **Per-Pixel Mirror-Based Method for High-Speed Video Acquisition**, *Lima, J.A.S., Miosso, C.J., Farias, M.C.Q.*, JOURNAL OF VISUAL COMMUNICATION AND IMAGE REPRESENTATION , v. 1, p. 1, 2017, <http://www.sciencedirect.com/science/article/pii/S1047320317301050>.
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.

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## Conference Papers

- 2020 **Hybrid Motion Magnification based on Same-Frame Optical Flow Computations**, Lima, J.A.S., Miosso, C.J., Farias, M.C.Q., 2020 IEEE 22nd International Workshop on Multimedia Signal Processing (MMSP), 2020, Tampere, Finland.
- Developed the method and the computational implementation in MATLAB/Python.
  - Performed the experiments and wrote the paper.
  - Presented the work virtually.
- 2018 **Evaluation of Different Types of Filters in Magnetic Resonance Imaging Using Compressive Sensing with Pre-Filtering**, Lima, J.A.S., von Borries, R., Miosso, C.J., Farias, M.C.Q., 2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2018, Honolulu.
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.
  - Attended to the conference and presented the work.
- 2017 **Avaliação de filtros de decomposição wavelet para reconstrução de imagens de Ressonância Magnética com Base em Compressive Sensing com Pré-Filtragem**, Lima, J.A.S., Miosso, C.J., Farias, M.C.Q., Congresso Brasileiro de Eletromiografia e Cinesiologia (COBEC) e o Simpósio de Engenharia Biomédica (SEB) COBECSEB, 2018, Uberlândia..
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.
  - Attended to the conference and presented the work.
- 2015 **REA-WSN: Intercluster routing algorithm for energy optimization in wireless sensor networks**, Lima, Paula; Lima, Jonathan; Solis, Priscila, 2015 7th IEEE LatinAmerican Conference on Communications (LATINCOM), 2015, Arequipa.
- Part of computational implementation.
- 2014 **Per-Pixel Mirror-Based Acquisition Method for Video Compressive Sensing**, Lima, J.A.S., Miosso, C.J., Farias, M.C.Q., Proc. of EUSIPCO 2014, 2014, Lisbon, Portugal.
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.
  - Attended to the conference and presented the work.
- 2012 **Transformada Q constante de comprimento de janela fixo**, Lima, J.A.S., Farias, M.C.Q., Brandao, M.C.P., Congresso de Engenharia de Áudio da AES-Brasil, 2012, São Paulo.
- Developed the method and the computational implementation in MATLAB.
  - Performed the experiments and wrote the paper.
  - Attended to the conference and presented the work.

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## Skills

Languages Matlab (7 years experience), C/C++(2 years experience), Python (2 year experience), C#, Java  
Frameworks Keras, PyTorch, Tensorflow  
Utilities OpenCV, SVN, Git, Qt, Unity,  $\LaTeX$ , Tikz  
Communication Portuguese, English

## Relevant Courses

Classroom Linear Algebra, Signal and Image Processing, Stochastic Processes, Computer Vision, Gaming Development  
Extra curricular Python, Machine Learning, Deep Learning, OpenCV, Arduino

## References

**Mylene Farias,**  
*Associate Professor,*  
Electrical Engineering Department, UnB,  
mylene@ene.unb.br.

**Cristiano Miosso,**  
*Assistant Professor,*  
Biomedical Engineering Graduate Program, UnB  
miosso@ieee.com.