

Dr. Ilísio VIANA

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Research & Development Engineer (Ph.D.)

Fields of Interest

Computer Vision, Machine Learning, Signal Processing, Web Development, Graph Theory, Numerical Analysis, Optimization, Embedded Systems, Solar Energy, Leadership, Management, Organization Theory, Change Management

Education

- 2018 **M.Sc. II, Economics and Organization, specialization in *Human Resources, Organization and Change Management***, Univ. Grenoble, France.
- 2016 **Ph.D., Computer science and Robotics** : "*Model based inspection of mechanical parts using computer vision*", IMT Mines Albi, France.
- 2012 **M.Sc. II, Artificial Intelligence and Robotics**, Paul Sabatier University of Toulouse, Toulouse, France.
- 2012 **M.Sc. I, Signal and Image Processing**, Paul Sabatier University of Toulouse, Toulouse, France.
- 2010 **B.Sc., Electrical and Computer Engineering**, Paul Sabatier University of Toulouse.
- 2005 **DALF, Diploma of Advanced French Language**, CILEC - International Center of Languages and Civilizations, Saint Étienne, France.

Experience

03.2019 - **R & D Engineer in Computer Vision**, *Magellium*, Toulouse, France.

- ▷ Image processing and 3D based vision system for vineyard pruning operation by a robot (POC)
- ▷ Technical lead - intelligent georeferencing and semantic image information system for C2IA challenge. Development of an automatic text recognition system to extract annotated information and free text in large sets of documents. Development of machine learning algorithm to classify images (aerial image vs maps). Write technical and test report. Deliver : full system in virtual machine and full documentation. Our full system is part of a bigger system.
- ▷ Technical Lead - vision based analysis of buckling deformations in airplane VTP.
- ▷ Deep Learning based object detection, semantic analysis, text recognition, 3D metrology, GUI Development, Camera Calibration, 3D Reconstruction
- ▷ OpenCV, C++, Tesseract, TinyXML2, Python, CloudCompare, Eclipse, Qt, QtCreator, Visual Studio Code, Cmake, Git, GitAhead, Gitlab, agile methodology

2018-2019 - **Teaching Assistant**, at *University of Toulouse*, France.

- ▷ Lecture image Processing using OpenCV, Master Signal, Image and Applications
- ▷ Image Processing, Matlab hands-on coding classe, Master Signal, Image and Applications
- ▷ Signal Processing, Matlab hands-on coding classe, Bachelor Electrical and Computer Engineering

2018 - 2019 **R & D Engineer / Project Manager in Computer Vision**, at *ORME*, Toulouse, France.

- ▷ Develop tracking algorithm to estimate particle velocity in a critical application. Customer deliver : graphical user interface (WxWidgets), installation and user guide
- ▷ Optimize camera calibration accuracy using large amount of image
- ▷ OpenCV, C++, Python, Visual Studio, Git, WxWidgets

2016 - 2018 **R & D Engineer / Project Manager in Computer Vision**, at *Steadysun*, Savoie, France.

- ▷ Cloud tracking from ground sky imager
- ▷ Depth Map Estimation from stereo
- ▷ Technical expertise in order to improve the design and robustness of ground sky-imagers
- ▷ Solar Energy forecast simulation
- ▷ Analyze performance of solar forecast algorithms
- ▷ Working with "Ops" team in order to deliver ready to production programs.
- ▷ Interface between company and providers
- ▷ Management of young Engineer in internship context
- ▷ Linux, OpenCV C++, Eclipse, Cmake, UML, Matlab, Python

2012 - 2015 **Research and teaching Assistant** *Institut Clément Ader* .

Resarch Topic : " CAD-based automated inspection of mechanical parts by computer vision

- ▷ Image registration and Feature extraction with Matlab
- ▷ Camera Calibration and Projection of CAD model to image plane with OpenCV C++
- ▷ Matching features using bipartite graph matching, exploring Python iGraph library

Teaching at School of Engineers, IMT Mines Albi, France

- ▷ Practical classes of Linear Control Theory for M.Sc. students
- ▷ Lecture and practical classes of Numerical Analysis (Curve Fitting, Differential Ordinary Equations...) and Non Linear Optimization for B.Sc. and M.Sc.
- ▷ Matlab, B.Sc.
- ▷ Electronics, M.Sc.
- ▷ Introduction to Scientific Research, (monitoring of two B.Sc. student groups)

2012 **Image Analyst**, *Noomeo*, Toulouse France.

- ▷ Analysis of 2D images provided by a stereo vision sensor and 3D data from CAD model to help in automated inspection using a robot arm equipped with an end effector sensor
- ▷ Software Design with UML, Matlab prototyping and C++ programming with OpenCV library

2009 - 2010 **Automated Line Production controller**, *Continental*, Toulouse, France.

- ▷ Setting up machines before the production, controlling all important parameters
- ▷ Monitoring the production in an industrial line. Act to solve line dysfunctions

2008 **Graphical User Interface Developer**, *LAPP*, Annecy, France.

- ▷ UML Modelling with Rational Rose
- ▷ Interface design with Visual Studio C#
- ▷ Python development with wxPython, IDE Eclipse, under Linux operating system

2003 - 2004 **French Language Teacher**, *Secondary School of Santana*, São Tomé and Príncipe.

Programming Languages and Softwares

C/C++, Python, PHP, Matlab, MySQL, CSS, HTML, XML, L^AT_EX,
OpenCV, Tesseract, Sci-kit Learn, TensorFlow, Keras
Cmake, Git, GitAhead, StarUML, Umbrello, Project Libre, Docker, Doxygen
Numpy, Matplotlib, iGraph, Pandas
Qt, wxWidgets, Beamer, BootStrap
Eclipse, VS Code, QtCreator, T_EXStudio

Language

Portuguese	Native
French	Bilingual
Inglês	Fluent
Espanhol	Intermediary level

Other relevant information

Technical Report in Organization	Analysis of Natural Resources and Energy Department of São Tomé and Príncipe at organization level as a partial requirement to fulfill Master in Human Resources, Organization and Change Management (2018).
Voluntary activities	Vice-President of daycare center "Les petits poussins de Quint-Fonsgrives". The structure has around 10 employees. Vice-president responds for Human Resources related activities. Member of the Board. Vice President in charge of Organization Development, Strategic Management, Project Development & IT strategy , of Chamber of Commerce Industry and Services of Swiss and Sao Tomé located at Neuchatel Swiss.
Web	Designer and webmaster : www.ccispesuisseburundi.com Personal website : www.viana.one .
Trips	Austria, Germany, Italy, Portugal, Spain, Belgium, Netherlands
Leisure	Chess, Football, Photography, Raspberry pi programming Driving License

Publication

- Ilísio Viana, Jean-José Orteu, Nicolas Cornille, and Florian Bugarin. Inspection of aeronautical mechanical parts with a pan-tilt-zoom camera : an approach guided by the computer-aided design model. *Journal of Electronic Imaging*, 24(6)061118, 2015.
- Igor Jovancevic, Ilísio Viana, Jean-José Orteu, Thierry Sentenac, and Stanislas Larnier. Matching CAD model and image features for robot navigation and inspection of an aircraft. *Fifth International Conference on Pattern Recognition Applications and Methods, Rome, Italy, 24-26 February 2016*.
- Ilísio Viana, Florian Bugarin, Nicolas Cornille, and Jean-José Orteu. CAD-guided inspection of aeronautical mechanical parts using monocular vision. *International Conference on Quality Control by Artificial Vision, France, Proceedings of SPIE, 95340I*, 30 April 2015.
- Ilísio Viana, Rémi Parlouar, Jean-José Orteu, and Ludovic Brèthes. Fast Automated Inspection of Mechanical Assembly using a combined 2D/3D vision approach. *IUTAM Symposium on Advances of Optical Methods in Experimental Mechanics, Taipei (Taiwan)*, 3-6, November 2012.
- Ilísio Viana, Florian Bugarin, Nicolas Cornille, and Jean-José Orteu. Application of bipartite graph to the matching of geometric primitives in vision based inspection. *International Summer School on VISion Understanding and Machine intelligence (VISUM), Porto-Portugal, 2 - 7 July 2015*. (Poster).
- Ilísio Viana, Florian Bugarin Parlouar, and Jean-José Orteu. Inspection d' assemblages mécaniques aéronautiques par vision artificielle. *Annual Conference of French Doctoral School, Systems (EDSYS)*, April 2014.
- Ilísio Viana, Rémi Parlouar, Florian Bugarin, Jean-José Orteu, and Ludovic Brèthes. Inspection automatisée d'assemblages mécaniques : vers une approche couplée vision 2D/vision 3D. <http://hal.archives-ouvertes.fr/hal-00839887>, June 2013.