

**Date of birth:** 10 September 1985

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## WORK EXPERIENCE

- **Research Director at Vision-Box** **November 2017 – present**
  - Technical management of the Research team portfolio.
    - Management of the Computer Vision, Biometrics, Deep Learning and cameras-based solutions.
    - Migration of the Vision-Box Face SDK for deep learning technologies.
    - Face Capture and Biometrics main developer.
    - Participation and leading proposal generation and delivery.
  
- **Research Team Leader at Vision-Box** **September 2016 – October 2017**
  - Responsible for the management of the research team.
    - **Biometric algorithms**
      - Real-time face detection, facial landmark estimation and facial quality image analysis.
    - **Biometric Evaluation Tool**
      - Design of biometric performance evaluation algorithms.
      - Data analysis for biometric image quality assessment.
    - **Vision – Box Biometric Consultancy Services**
      - Consultancy services based on environment analysis and biometric performances
  
- **Senior Software Developer at Vision-Box** **June 2014 – August 2016**
  - Integration in the team developing the new service-oriented architecture (SOA) platform for communication with hardware (such as cameras, fingerprint readers, etc.) and third party SDK.
  - Integration between different software components for biometric capture and clearance solutions.
  - Responsible for the development and maintenance of algorithms for automatic camera control, 2D/3D scene interpretation and foreground segmentation.
  - Support to worldwide software deployments, bug fixing and documentation.

**Technologies:** Development in Windows environment using C#, Self-Hosted WCF Rest services, C/C++, C++/CLI, Visual Studio, OpenCV, Aforge, Git/Gitlab, Dlib.

- **Developer at PT Inovação Project** **June 2013– April 2014**
  - Application of Computer Vision/Augmented Reality in product testing and maintenance for telecommunications support operations.
  - Responsible for the design, implementation and testing of a system to automatically retrieve hardware component description from a labeled database using a cell phone camera.

**Technologies:** Development in Linux environment mainly with MATLAB, C/C++ and OpenCV.

▪ **Developer at Project-Box Project** **August 2013– December 2013**

- Member of the team that prototyped a system capable of generate a 3D computational model by scanning objects with a consumer stereo camera.
- Responsible for the implementation, testing and support to client in the commercialization phase.

**Technologies:** Development in Linux environment mainly with MATLAB, C/C++ and OpenCV.

## EDUCATION

▪ **PhD in Electrical and Computer Engineering** **July 2010– April 2015**

**Department of Electrical and Computer Engineering, FCT, University of Coimbra, Portugal**

- Approved with distinction and honors by unanimity (Highest honors).
- Computer vision research on 3D motion estimation, geometric vision, image processing.
- Multiple top-tier conferences awards and prize nominations.

▪ **Master in Biomedical Engineering** **September 2009– July 2010**

**Department of Physics, FCT, University of Coimbra, Portugal**

## TECHNICAL SKILLS

**Programming Skills:** C#, C++, C++/CLI, MATLAB, Octave, WCF Rest services.

**Operating Systems:** Linux, Mac OS, Microsoft Windows.

**Productivity Tools:** Jira, Confluence, Microsoft Office, LibreOffice, LaTeX.

**Version Control Systems:** Git, TFS, SVN.

## RESEARCH INTERESTS

**Advanced expertise:** Sparse Feature Detection and Description, Image Registration, Image Categorization and Large-Scale Image Retrieval, Camera Automatic Control, Biometric recognition.

**Good knowledge:** Structure-from-Motion in Monocular and Stereo Cameras, Geometric Computer Vision and Discrete Optimization, Machine Learning, Deep Learning.

## PUBLICATIONS

**sRD-SIFT Keypoint Detection and Matching in Images with Radial Distortion**, Miguel Lourenço, João P. Barreto, and Francisco Vasconcelos, IEEE Transactions on Robotics, 2012.

**Keypoint Detection, Tracking and Matching for Medical Endoscopy: Evaluating the Impact of Radial Distortion in Structure-from-Motion Accuracy**, Miguel Lourenço, D. Stoyanov e João P. Barreto. Computer Assisted Radiology and Surgery (CARS) 2015.

**Continuous Zoom Calibration by Tracking Salient Points in Endoscopic Video**, Miguel Lourenço *et al.*. International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2014 (accepted as oral presentation, **acceptance rate of 4%**).

**Visual Odometry in Stereo Endoscopy by using PEaRL to handle Partial Scene Deformation**, Miguel Lourenço, Danail Stoyanov e João P. Barreto. Augmented Reality Workshop, held in conjunction with Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2014.

**Plane-based Odometry using an RGB-D Camera**, Carolina Raposo, Miguel Lourenço, and João P. Barreto, British Machine Vision Conference (BMVC), 2013.

**Fusing Appearance and Geometric Constrains for estimating the Epipolar Geometry**, Miguel Lourenço and Nuno Gonçalves, Workshop of Applications on Computer Vision (WACV), 2013.

**Tracking Features in Uncalibrated Images with Radial Distortion**, Miguel Lourenço and João P. Barreto, European Conference on Computer Vision (ECCV), 2012.

**Localization in large-scale indoor environments by querying omnidirectional visual maps using perspective images**, Miguel Lourenço, Vitor Pedro and João P. Barreto, International Conference on Automation and Robotics (ICRA), 2012.

**Feature Detection and Matching in Images with Radial Distortion**, Miguel Lourenço, João P. Barreto and Abed Malti, International Conference on Automation and Robotics (ICRA), 2010.

## PATENTS

**Method for aligning and tracking point regions in images with radial distortion that outputs motion model parameters, distortion calibration, and variation in zoom pattern.** Miguel Lourenço\*, João P. Barreto and Rui Melo. US Patent reference: US 20150254872 A1. (\* Outcome of authors PhD dissertation).

## LANGUAGES

**Native language:** Portuguese.

**Advanced user:** English.

## AWARDS AND DISTINCTIONS

Finalist of the Best Student Paper Award at ICRA 2010.

Travel Award Grants for ICRA 2010 and ICRA 2012.

FCT PhD grant for 4 years of research.