João Carreira
Curriculum vitae

✍ | João Filipe Monteiro Carreira
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SUMMARY

Electrical Engineer, specialist in video coding, transmission and quality evaluation.

Versatile and very enthusiastic about software development and problem solving, always seeking new challenges.

Main interests include video coding, software development, embedded systems and operating systems.

WORK EXPERIENCE

November 2008 – Present

Instituto de Telecomunicações - IT
Research fellow

2013-2018: Develop techniques to improve the error resilience and error concealment of the HEVC standard.
2009-2012: P3DTV Project - Subjective quality evaluation of 3D video quality affected by transmission errors. Development of error concealment techniques for 3D video decoder's complaint with H.264/MVC.
2008-2009: Research on the state of art technologies for digital television broadcast; performance evaluation of DVB-T transmission using R&S SFE and R&S DVM400.

March 2017 – Present

ESTG, Polytechnic Institute of Leiria
Invited Assistant Lecturer

Professor of Electronics Engineering Department.
Contents: circuits analysis, embedded programming, C/C++ language.

January 2014 – March 2014

University of Surrey
Assistant Lecturer

Lecturer on practical based course work of software and hardware development.
Contents: C language, microcontrollers programming.

October 2011 – July 2012

ESTG, Polytechnic Institute of Leiria
Laboratory Assistant

Provide support to students on the practical courses.
Contents: C language, microcontrollers programming.

SOFTWARE SKILLS

IDE	Eclipse, Visual Studio, MPLAB, LabVIEW, Proteus, AutoCAD;
TOOLS	FFmpeg, KDE,QT, shell tools (sed, awk, grep), gcc, CMake, valgrind;
OS	Gentoo, Ubuntu, Windows:
CODECS	HM (HEVC), JM (H.264/AVC) reference software;
OFFICE	Experienced with MS Word and Excel;
PROJECTS	Main developer of Calyp: Raw video player based on Qt with support for frame processing plugins (https://github.com/pixlra/calyp).

EDUCATION

January 2015 – Present

IDT, Loughborough University London
PhD Student in Electrical Engineering

Thesis title: Error resilience and error concealment for High Efficiency Video Coding Standard
Supervisors: Ahmet Kondoz, Erhan Ekmekcioglu - IDT; Pedro Assunção, Sérgio Faria - IT.

April 2013 – December 2014

University of Surrey
PhD Student in Electrical Engineering

Supervisors: Ahmet Kondoz, Erhan Ekmekcioglu; Pedro Assunção, Sérgio Faria.

Setember 2010 - December 2012

ESTG, Polytechnic Institute of Leiria
MSc in Electrical Engineering - Telecommunications

Thesis title: "Subjective Quality Evaluation and Frame Loss Concealment in 3D Video".
Supervisors: Pedro Assunção, Sérgio Faria and Nuno Rodrigues.
Classification: 18 out of 20.

September 2007 - July 2010

ESTG, Polytechnic Institute of Leiria
BSc in Electrical Engineering – Electronics and Telecommunications

Final project title: "DVB-T3D - Transmission of 3D Television over a DVB-T Channel".
Supervisors: Pedro Assunção and Sérgio Faria.
Classification: 17 out of 20.

PROGRAMMING SKILLS

ADVANCED	C/C++, bash, Matlab, Python, LaTeX.
BEGINNER	HTML, VHDL, Ladder.

COMMUNICATION SKILLS

PORTUGUESE	Native speaker
ENGLISH	Oral: fair – Written: good

IELTS - International English Language Testing System: Average score of 7.0 out of 10 (2013).

TECHNICAL SKILLS

- Research and development;

- Image and video compression;

- 2D/3D video transmission and quality evaluation;

- Experience with programmable devices, e.g., FPGA, Microcontrollers, Arduino;

- Experience with Linux operating system and networking concepts;

- Experience with software configuration management (SCM), e.g., Git and Subversion.

ADDITIONAL INFORMATION

INTERESTS   Software development: *main developer of an open source raw video player*;
Embedded systems: *Raspberry PI and Arduino DYU projects*;
Open-source software: *Minor contributions to Gentoo OS and KDE framework*;
Helping on local non-profit organisation.

DRIVING LICENSE   A, B

PUBLICATIONS

JOURNAL PUBLICATIONS:

- J. Carreira, P. Assuncao, S. Faria, E. Ekmekcioglu, and A. Kondoz, "Error concealment-aware encoding for robust video transmission," *IEEE Transactions on Broadcasting*, pp. 1–12 (available in IEEEXplore since Sep. 2018).

- J. Carreira, P. Assuncao, S. Faria, E. Ekmekcioglu, and A. Kondoz, "A Two-stage Approach for Robust HEVC Coding and Streaming," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 28, no. 8, pp. 1960–1973, Aug. 2018.

INTERNATIONAL CONFERENCE PUBLICATIONS:

- J. Carreira, P. Assuncao, S. Faria, E. Ekmekcioglu, and A. Kondoz, "A Robust Video Encoding Scheme to Enhance Error Concealment of Intra Frames," in *IEEE International Conference on Circuits and Systems (ISCAS)*, May 2017, pp. 1–5.

- J. Carreira, P. Assuncao, S. Faria, E. Ekmekcioglu, A. Kondoz, and H.Lim, "Reference Picture Selection using Checkerboard Pattern for Resilient Video Coding," in *IEEE International Conference on Visual Communications and Image Processing (VCIP)*, Dec. 2015, pp. 1–5.

- J. Carreira, E. Ekmekcioglu, A. Kondoz, P. Assuncao, S. Faria, and V. D. Silva, "Selective Motion Vector Redundancies for Improved Error Resilience in HEVC," in *IEEE International Conference on Image Processing (ICIP)*, Oct. 2014, pp. 2457–2461.

- J. Carreira, V. D. Silva, E. Ekmekcioglu, A. Kondoz, P. Assuncao, and S. Faria, "Dynamic Motion Vector Refreshing for Enhanced Error Resilience in HEVC," in *22nd European Signal Processing Conference (EUSIPCO)*, Sep. 2014, pp. 281–285.

- J. Carreira, P. Assuncao, N. Rodrigues, and S. Faria, "Frame Loss Concealment for 3D Video Decoders Based on Disparity-Compensated Motion Field," in *3DTV-Conference: The True Vision - Capture, Transmission and Display of 3D Video (3DTV-CON)*, Oct. 2012, pp. 1–4.

- L. Pinto, J. Carreira, S. Faria, N. Rodrigues, and P. Assuncao, "Subjective Quality Factors in Packet 3D Video," in *Third International Workshop on Quality of Multimedia Experience (QoMEX)*, Sep. 2011, pp. 149–154.

- J. Carreira, L. Pinto, N. Rodrigues, S. Faria, and P. Assuncao, "Subjective Assessment of Frame Loss Concealment Methods in 3D Video," in *Picture Coding Symposium (PCS)*, Dec. 2010, pp. 182–185.

NATIONAL CONFERENCE PUBLICATIONS:

- J. Carreira, S. Faria, P. Assuncao, E. Ekmekcioglu, and A. Kondoz, "Error Resilience Analysis of Motion Vector Prediction in HEVC," in *Conference on Telecommunications (Conftele)*, Oct. 2015, pp. 1–4.

- J. Carreira, N. Rodrigues, S. Faria, and P. Assuncao, "Frame Loss Concealment for H.264/AVC Stereo Video Decoders," in *Conference on Telecommunications (Conftele)*, May 2013, pp. 1–4.