

Sergi Pons Freixes

Curriculum Vitae

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Experience

- 2016–present **Lead Engineer**, *Eastridge Workforce Solutions*, California.
Same duties as a Software Engineer, with the additional responsibilities:
- First responder to engineering requests, bugs and alerts
 - Creation, delegation, prioritization and coordination of engineering tasks
 - Responsible for code quality
 - Deployment of code to QA and production systems
- 2015–2016 **Software Engineer**, *Eastridge Workforce Solutions*, California.
Responsible for designing and building modular applications and RESTful APIs using:
- Python web frameworks (Pyramid)
 - SQL object-relational mappers (SQLAlchemy)
 - Version control systems (Git with Gitflow)
 - Collaborating with front-end engineers
- 2013–2014 **Performance Simulation Engineer**, *Rhea Group - European Space Agency, System Support Division*, Netherlands.
Expert on the System Performance Simulator and the Ground Processor Prototype for the Sentinel 3 satellite.
- Responsible for the simulators and processors, including:
 - Operation and control of the hardware and software infrastructure
 - Corrective and evolutive maintenance
 - Support to the analyses performed
 - Planning, execution and evaluation of data generation and processing tasks
 - Development of helper tools and software useful for related activities
- 2011–2013 **Spanish Trainee**, *European Space Agency, Earth Observation Exploitation and Services Division*, Italy.
Assess the viability of remote sensing coral monitoring, including:
- Identification of users, needs, state of art
 - Proposal, implementation and evaluation of data processing methodologies using MERIS products (BEAM, NumPy-SciPy, matplotlib)

2007–2011 **Assistant Researcher**, *Marine Technology Unit-Spanish National Research Council (UTM-CSIC), Department of Research and Technological Innovation, Spain.*

- Design and development of hardware (gEDA, Altium P-CAD) and software (PIC assembler, dsPIC C) for embedded systems and hyperspectral sensors
- Design and development of software for workstations:
 - Control and communication to external hardware (Python, Tkinter GUI)
 - Data and video processing with signal processing algorithms and artificial intelligence (OpenCV, NumPy-SciPy, Orange toolbox, MATLAB)
 - Data visualization (matplotlib)
- Simulation of hyperspectral scenarios with the radiative transfer numerical model HydroLight-EcoLight
- Collaboration on several research projects funded by the Spanish National Research Council and the Spanish Ministry of Education and Science
- Supervision of Master Thesis'

2004–2006 **Assistant Researcher**, *Polytechnic University of Catalonia (UPC), Spain.*

Development of hardware and software for workstations, embedded systems and hyperspectral sensors

Advisor of Master Thesis

Title *Sistema de processat d'imatges per observatoris oceanogràfics*

Author Albert Martin

Institution Polytechnic University of Catalonia (UPC)

Description Image processing system for oceanographic observatories

Year 2010

Title *Desenvolupament d'una eina Software per al control d'espectròmetres a través de dispositius PDA*

Author Núria Pujol

Institution Polytechnic University of Catalonia (UPC)

Description Development of software to control and acquire data from spectrometers using PDA devices

Year 2008

Education

2007–2015 **Doctor of Philosophy (Ph.D.)**, *Polytechnic University of Catalonia (UPC) and Marine Technology Unit, Spanish National Research Council (UTM-CSIC).*

Do-it-yourself instruments and data processing methods for developing marine citizen observatories

Supervisors: Jaume Piera, Luigi Ceccaroni

Demonstration of how open source software and low-cost do-it-yourself hardware are effectively applied to oceanographic research and how can it develop into citizen science

Collaborations:

- 2010, five months stay at the Monterey Bay Aquarium Research Institute (MBARI), Moss Landing (California, USA)
- 2008, three months stay at the Department of Computer Science and Information Sciences, University of Strathclyde, Glasgow (Scotland)

2004–2006 **Master degree in Telecommunications Engineering**, *Polytechnic University of Catalonia (UPC).*

2000–2004 **Telecommunications Engineer**,
Polytechnic University of Catalonia (UPC).

Master of Advanced Studies

Title *Advanced Studies Diploma in Signal Theory and Communications Doctorate*

Description For completing the teaching and research stages in the
Signal Theory and Communications Doctorate program

Year 2008

Master Thesis

Title *Espectroradiòmetre intel·ligent basat en dsPIC*

Description Intelligent spectroradiometer based on dsPIC. Design and development of hardware and
software for an oceanographic probe consisting on depth and hyperspectral sensors

Year 2006

Languages

Catalan Mother Tongue

Spanish Mother Tongue

English Full professional proficiency

Italian Conversationally fluent

Participation in research projects

2009–2011 **SUMMER. SURface Mixing Modulation of the Exposure to solar Radiation**,
*Marine Technology Unit, Artificial Intelligence Research Institute, Industrial Au-
tomation Institute, Institute of Marine Sciences.*

In situ evaluation of surface mixing modulation of the exposure to solar Radiation on the
ocean

Funded from: Spanish National Research Council

2008–2010 **ANERIS. ANálisis y desarrollo de una sonda oceAnogRáfica Inteligente con
capacidad autónoma de obtención de muestra**, *Marine Technology Unit, Ar-
tificial Intelligence Research Institute, Industrial Automation Institute, Institute of
Marine Sciences.*

Analysis and development of an intelligent oceanographic probe with autonomous capacity
for obtaining samples

Funded from: Spanish National Research Council

2006–2007 **HIDRA. Caracterización Hiperespectral del ambiente lumínico en el oceano
mediante moDelos de tRansferencia rAdiativa**, *Marine Technology Unit.*

Hyperspectral characterization of the lighting ambient on the ocean using radiative transfer
models

Funded from: Spanish National Research Council

2004–2007 **SAMPLER. Desarrollo de un Sistema de adquisición y Análisis de datos
oceanográficos de Microestructura y PerfiLes hipERespectrales**, *Polytechnic
University of Catalonia, Marine Technology Unit.*

Development of an acquisition and analysis system for micro-structure oceanographic data
and hyperspectral profiles

Funded from: Spanish Ministry of Education and Science

Awards

- 2010 **Finalist in student poster competition**, *IEEE/OEE Oceans Conference and Exhibition, Oceans'10*, Sydney (Australia).
Video-image processing applied to the analysis of the behaviour of deep-water lobsters (*Nephrops norvegicus*)
- 2007 **3rd prize in student poster competition**, *IEEE/OEE Oceans Conference and Exhibition, Oceans'07*, Aberdeen (Scotland).
Monolithic spectrometer for environmental monitoring applications

Hobbies and interests

- Open source Open source enthusiast. Founding member of the Linux User Group Catux (currently inactive member)
- Strategy games Press Ganger for Privateer Press games, organizer of leagues, tournaments and demo events
- Digital photography Self taught, enjoying both shooting and post-processing

Publications

- I.F. Aymerich, S. Pons, J. Piera, E. Torrecilla, and O.N. Ross. Comparison between hyperspectral irradiance reflectance and diffuse attenuation coefficient as indicators of algae presence in the water column. In *IEEE Second workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, WHIPSERS'10*, 2010.
- J. Piera, S. Pons, M. Merchan, and R. Quesada. Control of Monolithic Spectrometer: Applications for environmental monitoring. *Instrumentation ViewPoint*, 4:8–9, 2004.
- J. Piera, R. Quesada, E. Torrecilla, I. Fernández, and S. Pons. An instrumentation project for studying the effects of turbulence in aquatic systems. *Instrumentation ViewPoint*, 4:30–31, 2005.
- S. Pons, J. Aguzzi, and J. Piera. Automated video-image analysis of the behaviour of deep-water lobsters (*Nephrops norvegicus*). *Instrumentation Viewpoint*, 8(77):9, 2009.
- S. Pons, J. Aguzzi, and J. Piera. Video-image processing applied to the analysis of the behaviour of deep-water lobsters (*Nephrops norvegicus*). In *IEEE/OEE Oceans Conference and Exhibition, Oceans'10 Sidney*, 2010.
- S. Pons, I.F. Aymerich, E. Torrecilla, and J. Piera. Low cost hyperspectral device suitable for monitoring sensor networks. *Instrumentation ViewPoint*, 6:60–61, 2007.
- S. Pons, I.F. Aymerich, E. Torrecilla, and J. Piera. Monolithic spectrometer for environmental monitoring applications. In *IEEE/OEE Oceans Conference and Exhibition, Oceans'07 Aberdeen*, 2007.
- S. Pons, L. Ceccaroni, and J. Piera. Design of a sensor network with adaptive sampling. In *iEMSS 2008 Conference (The International Environmental Modelling and Software Society Conference)*, 2008.

- S. Pons, S. Pinnock, A. Dekker, and C. Brockmann. Use of DUE CoastColour products for studying the impact of cyclones on the Australian Great Barrier Reef. In *Sentinel-3 OLCI/SLSTR and MERIS/(A)ATSR workshop*, 2012.
- S. Pons, E. Torrecilla, M. Vilaseca, and J. Piera. Low cost hyperspectral sensors: potential applications for characterization of multi-scale ocean processes. In *EOS Topical Meeting on "Blue" Photonics - Optics in the Sea*, 2009.
- R. Quesada, J. Piera, I. Fernández, E. Torrecilla, and S. Pons. Turbulent oceanic flow characterization derived from high-resolution CTD data processing. *Instrumentation ViewPoint*, 4:31–32, 2005.
- E. Torrecilla, I.F. Aymerich, S. Pons, and J. Piera. Effect of spectral resolution in hyperspectral data analysis. In *IEEE International Geoscience And Remote Sensing Symposium, 2007. IGARSS 2007*, pages 910–913, 2007.
- E. Torrecilla, J. Piera, I.F. Aymerich, S. Pons, O.N. Ross, and M. Vilaseca. Hyperspectral remote sensing of phytoplankton assemblages in the ocean: effects of the vertical distribution. In *IEEE Second workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, WHIPSERS'10*, 2010.
- E. Torrecilla, J. Piera, R. Quesada, I. Fernández, and S. Pons. Characterization of the water optical properties using hyperspectral sensors. *Instrumentation ViewPoint*, 4:48–49, 2005.
- E. Torrecilla, S. Pons, I.F. Aymerich, and J. Piera. Comparative response of two different hyperspectral sensors. Application to derivative analysis of absorption spectra. *Instrumentation ViewPoint*, 6:86–87, 2007.
- E. Torrecilla, S. Pons, A. Vilamala, I.F. Aymerich, J. Arcos, E. Plaza, and J. Piera. Mapping marine phytoplankton assemblages from a hyperspectral and Artificial Intelligence perspective. In *IEEE/OEE Oceans Conference and Exhibition, Oceans'10 Sydney*, 2010.
- E. Torrecilla, S. Pons, M. Vilaseca, J. Piera, and J. Pujol. Stray-light correction of in-water array spectroradiometers. Effects on underwater optical measurements. In *IEEE/OEE Oceans Conference and Exhibition, Oceans'08*, 2008.