PERSONAL INFORMATION

Agujetas Ortiz, Rafael

Address	Calle García de Paredes 15, 4º B. 06006 Badajoz. Spain
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Birth date and nationality	August 22th 1978. Spanish.

EDUCATION

Currently	**PhD CANDIDATE,** at UNIVERSIDAD DE EXTREMADURA
September 2011- June 2014	**BACHELOR´S DEGREE IN AEROSPACE ENGINEERING IN AIRCRAFTS (100% English),** at EUROPEAN UNIVERSITY
September 2008 – April 2010	**EXECUTIVE MBA**, at EOI (ESCUELA DE ORGANIZACION INDUSTRIAL). MADRID. SPAIN
October 2008 – September 2003	**AGRONOMIST ENGINEER**, at UNIVERSITY OF EXTREMADURA

RESEARCH EXPERIENCE

Currently

I am working as Scientific and Research Staff at Universidad de Extremadura, where I participate in 3 lines:

- Bioengineering: Biofluid Mechanics. Analyzing blood flow through stenosed arteries, airflow through human airways and the aqueous humor dynamics inside the human eye.
- Experimental Aerodynamics in wind tunnel: civil engineering and trucks
- Computational Fluid Dynamics (CFD): projects for different industrial sectors (trucks and chemical industry)

Space

I worked at Instituto de Microgravedad Ignacio Da Riva (Universidad Politécnica de Madrid) as Space Systems Engineer, focusing my activity in **structures**, **thermal control, power** and **orbit determination**.

Main involved projects:

- UPMSat-2: thermal analysis and tests (STM model).
- Euclid (ESA mission to deep space observation): thermal analysis (PDR)
- Instrument SO/PHI (Solar Orbiter Mission): thermal analysis
- Union: Mission Analysis phase (orbit determination and power budget)

Tools: ESATAN, STK, GMAT, Matlab/Simulink, Nastran/Patran, Catia

Bachelor´s Thesis

Orbital Elements Determination for an Artificial Satellite from Initial Observations: a MATLAB Solution to Lambert's Problem.

Fluids Mechanic

Different simulations of fluid flows, based on **CFD** method, working with softwares: **Fluent**, and **Gambit** to build the geometry and mesh:

- Fluid Flow and Heat Transfer in pipes
- Computing the turbulent flow past a transonic airfoil
- Solving an acoustics field generated from a sedan car using the broadband noise model

I have also collaborated in a **research group** at the University of Extremadura as **technical support** in a development project of a new device for cardiopulmonary bypass surgery, in which my role is to apply **CFD** to simulate certain critical blood flow and compare results with laboratory experiments. This group is constituted by the Department of Fluid Mechanics (School of Industrial Engineering), and Cardiac Surgery (Faculty of Medicine).

Aerodynamics and Aeroelasticity

A detailed study of the **aerodynamic behaviour**, versus different freestream parameters: speed, temperature, pressure and density, of an Onera M6 wing.

Software based on **CFD** method used: **SU2 (Stanford University Unstructured)**

Aerospace Technology	Aerodynamics design of a glider, using **XFLR5** (an analysis tool for airfoils, wings and planes operating at low Reynolds Numbers, created by Dr Mark Drela, from MIT)
Space Vehicles and Missiles, and Satellite Design	Preliminary Design Review **(PDR)** and Critical Design Review **(CDR)** of a **1U Cubesat** project. In charge of **Thermal Control subsystem**, and **Payload. Mission:** Earth observation with a NanoCam
Aircrafts Design	**Final design of an agricultural aircraft** fulfilling the requirements of FAR 23. Span: 19 metres. Length: 8.80 metres
Space Astrophysics	Research and public exhibition of **Planck satellite mission**: payload and results
Space Weather	○ Determination of the **differential speed of rotation of the sun**, through the tracking of sunspots ○ Study of **geomagnetic activity** and its relation with the solar cycle ○ Research of Interplanetary Origin of **Geomagnetic Storms**

WORK EXPERIENCE

March 2016 - Currebtly	**Scientific and Research Staff.** Area of Fluid Mechanics. Universidad de Extremadura. Spain
November 2014 – June 2015	**Space Systems Engineer.** Instituto de Microgravedad Ignacio Da Riva (Universidad Politécnica de Madrid). Spain
April 2008 – September 2011	Bank **Branch Manager**. Santander Group. Badajoz. Spain
July 2006 – April 2008	**Director of real-estate department**. Santander Group. Extremadura. Spain
May 2005 – July 2006	**Area Delegate**. Eurovaloraciones SA (consulting). Alicante. Spain
November 2003 – May 2005	**Technical Commercial Manager**. Gesvalt S.A (consulting). Madrid. Spain
October 1999 – November 2003	**Professor of Mathematics, Physics and Chemistry**. Centro de Estudios Santo Domingo. Badajoz. Spain

SKILLS

Computational skills:

- Experienced in Mac OS X system
- Experience with languages: C and Matlab
- Experienced in the use of CFD codes (Fluent) for the simulation of complex flows
- Specific Softwares: Esatan, Gambit, Matlab, XFLR5, SU2, Nastran/Patran, Catia

Languages:

- Spanish: native language
- English: high written and spoken level
- Italian: high written and spoken level. Erasmus in Italy

Others:

- Ability to listen, Communication, Persuasion, Negotiation, Customer Service and Flexibility
- Spirit of teamwork
- Effective and professional facing new challenges
- Capacity, sacrifice and willingness to learn

OTHER DATA OF INTERESTS

- Driving license: B
- Erasmus grant in Italy (2002/2003).
- Total availability and interest in travelling
- Interested in Magic and Illusionism; Aeromodelling