

# Francisco Javier Blanco-Silva

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*Applied Mathematician and entrepreneur with a versatile skill set on both quantitative and qualitative research. Quick learner. Seeking a position for a Data Science Team as either software engineer or researcher.*

## Relevant Professional Experience

### Private Sector

#### Tizona Scientific Solutions

Lexington, SC

Owner

2011–present

Scientific consulting company: Tizona delivers solutions to commercial clients through sophisticated analysis and development of graphic-intensive, easily accessible software suites.

- Research based on basic implementation of Data Analysis. Wrote code and scripts in R and pyLab.
  - Development of web-applications (coded in HTML+CSS, PHP, JavaScript, SQLite with additional scripts in either python or ruby when needed).
- (see e.g. [git://github.com/blancosilva/lizard.git](https://github.com/blancosilva/lizard.git))

### Academia

#### IMI and Department of Mathematics, University of South Carolina

Columbia, SC

Research Assistant Professor & Instructor

2007–present

- Wrote a technical book on Scientific Computing via the python libraries numpy, scipy, and matplotlib: *Learning SciPy for Numerical and Scientific Computing*. Packt Publishing (February 2013)
- Research on systematic approaches to extracting high resolution information from HAADF-STEM images which will be beneficial to the characterization of beam sensitive materials. Developed parallel code to perform super-resolution of time-frames of micrographs in both Matlab, and C/C++ with the CImg libraries. The codes were run in a 16-processor UNIX machine property of the IMI, and a 272 core parallel computational cluster property of the University of South Carolina. Co-authored chapter 5 of the book *Modeling Nanoscale Imaging in Electron Microscopy (Nanostructure Science and Technology)*. Springer (March 2012)
- Research on the development of multi-resolution formulated algorithms to enable high compression rates using non-linear approximation methods, enhanced procedures for Hausdorff metric estimation, and the efficient structures for organization of digital urban terrain data.

#### Department of Mathematics, Purdue University

West Lafayette, IN

Graduate Student and Teaching Assistant

1999–2007

- Wrote triangulation code in scheme for Numerical Partial Differential Equations ([git://github.com/blancosilva/triangulation.git](https://github.com/blancosilva/triangulation.git))
- Collaborated with Forestry Engineer C. Rizcalla and Mathematician S. Gruver to produce a scientific paper on epidemiology, studying the impact of ebola on different populations: *Modeling the Impact of Ebola and Bushmeat Hunting on Western Lowland Gorillas*. EcoHealth (June 2007). Also wrote the codes that performed the numerical simulations for this model in C/C++, and run them in a 4-processor UNIX machine. ([git://github.com/blancosilva/ebola.git](https://github.com/blancosilva/ebola.git))
- Assisted with code development in scheme to build a computer system to perform “Homework on the Web.” ([www.math.purdue.edu/about/purview/summer2005.pdf](http://www.math.purdue.edu/about/purview/summer2005.pdf))
- Developed a series of scripts in 0Cam1 to compute and manipulate wavelet coefficients of 1 and 2-D signals. With them, one is able to perform high-level image processing like denoising and edge detection. ([git://github.com/blancosilva/imageProc0Cam1.git](https://github.com/blancosilva/imageProc0Cam1.git))
- Developed a series of scripts in python to solve a problem in kinetics of networks of enzymatic reactions. The scripts allow input of a single enzyme, and retrieval of all possible networks in which the enzyme is present (from the online databases at [www.enzyme-database.org](http://www.enzyme-database.org)) One is also able to input the initial concentration of substrates present in the chemical reactions, and the codes will compute the concentration of all components at any given time. The computations were usually performed by two multiprocessing systems: a 4-processor UNIX machine property of the Department of Mathematics of Purdue University, and for a brief period of time, an IBM supercomputer property of the University of Kentucky. ([git://github.com/blancosilva/enzyme.git](https://github.com/blancosilva/enzyme.git))
- Assisted in the edition of the book “Lecture Notes in Analysis” by Professor Rodrigo Bañuelos ([www.math.purdue.edu/~banuelos/site/Analysis%20Notes](http://www.math.purdue.edu/~banuelos/site/Analysis%20Notes)) The book was entirely written in L<sup>A</sup>T<sub>E</sub>X.

#### Universidad Complutense de Madrid

Madrid, Spain

Undergraduate student

1998

Developed a simple system for Mechanical Geometry Theorem Proving in Maple. The system allows a computer to prove the validity of conjectures in plane Euclidean Geometry, thus potentially offering proofs to Theorems. Wrote a research article on the subject: F. J. Blanco-Silva, *Sobre demostración automática de un problema geométrico*. Bol. Asoc. Prof. Puig Adams (October 1999) 78–81.

## Education

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**Purdue University**  
*Ph.D. in Mathematics*

**West Lafayette, IN**  
2007

## Languages

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**Spanish:** Fluent

*El español es mi lengua materna.*

**English:** Fluent     *More than working-level that allows me, among other skills, to speak effectively, write concisely, listen attentively, express ideas, report information, edit, interview, and facilitate group discussions.*

## Computer skills

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**Scripting Languages:** AWK, GAWK, Unix shell (including bash, csh, ksh, sh, tcsh and zsh), EMACS Lisp, JavaScript, Perl, PHP, python, Sed

**Scientific-oriented Programming Languages:** C, C++, Objective-C, Cocoa, Caml/OCaml, julia, scheme, Fortran, MPI, PHP, python, R, ruby, SQL

**Mathematical Engines:** Magma, Maple, Mathematica, MATLAB, Maxima, octave, pylab, Rstudio

**Markup:** CSS, HTML,  $\text{\TeX}$ / $\text{\LaTeX}$ , markdown, asciidocs