Carlos Salinas

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EDUCATION

Master of Science, Mathematics — August 2020
Purdue University, West Lafayette, IN
GPA 3.73

Bachelor of Science, Mathematics — May 2014
University of Texas–Pan American, Edinburg, TX
GPA 3.86

SKILLS

Programming languages: Lisp, Python, R, C, Java, Octave/MATLAB
Python packages: numpy, scikit-learn, matplotlib, pandas, keras, spaCy
R packages: ggplot, shiny, tidyverse, dplyr, forcats, modelr, broom
Misc. software: Emacs, Vim, SQL, Git, Latex, Mathematica, LibreOffice, Google Docs
Operating systems: Linux (Debian, Fedora, Gentoo), FreeBSD, Windows
Natural languages: English, Spanish, Russian, Persian/Farsi

EXPERIENCE

Teaching Assistant — August 2014-May 2020
Department of Mathematics, Purdue University, West Lafayette, IN

- Instructed undergraduate calculus 2.
- Held recitation and office hours for calculus 1, 2, and 3 courses.
- Assigned final scores based on the student's cumulative performance using spread sheets.
- Graded differential equations and linear algebra courses at the undergraduate and graduate level.
- Created and updated a university website to post notes and solutions to recitation related problems.

Research Assistant — September 2013-May 2014
University of Texas–Pan American, Department of Mathematics, Edinburg, TX

- Wrote Mathematica code to study traces in character varieties.
- Discovered a possible correspondence between 2-special pairs and pairs of orientable necklaces.
- Published the associated sequence in the On-line Encyclopedia of Integer Sequences under A237623.
- Presented results at Howard University's Workshop on Character Varieties and Geometric Structures.

Experimental Algebra and Geometry Lab System Admin — September 2013-May 2014
University of Texas–Pan American, Department of Mathematics, Edinburg, TX

- Administrated the department's Experimental Algebra and Geometry Lab's Fedora cluster.
- Maintained an operational CUDALink computing station for doing Mathematica simulations.
- Operated and updated the lab's 3D printer.
- Engaged with local schools in math and geometry related outreach activities.

TALKS

Trends in book-reading over the years — Summer 2020
PI4 Computational Boot Camp, University of Illinois Urbana-Champaign

- Wrote R code together with a team to analyze and predict trends in book-reading.
- Modeled the *popularity* of well-known authors using R's modelr package.

The Black–Scholes model as an application of Itô calculus — Summer 2019
Student Analysis Seminar, Department of Mathematics, Purdue University

- Introduced the audience to the Black–Scholes model and solved it using the Feymann–Kac formula.

Cybenko's Approximations by superpositions of sigmoidal functions — Spring 2019
Machine Learning and Information Processing Reading Group, Purdue University, West Lafayette, IN

- Introduced the audience to a foundational result in the study of artificial neural networks.
- Proved the necessary lemmas to show that sigmoidal functions can approximate any continuous function.

The Bott periodicity theorem — Fall 2017
Student Colloquium Department of Mathematics, Purdue University, West Lafayette, IN

- Proved the Bott periodicity theorem from the perspective of classifying space theory.

Wavelet image compression — Fall 2015
Department of Mathematics, Purdue University, West Lafayette, IN

- Debugged and documented C code for wavelet image compression.
- Presented on the algorithm behind the compression code together with a team.