# Jose de Jesus Martinez

Mathematician and Sr Analytics Engineer

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**About me**

Mathematical scientist with professional experience in the Oil & Gas industry. My contributions range from numerical methods to a variety of statistical analysis. I'm an individual who enjoys making a difference at the technical level but also as a group member. I believe that developing valuable tools and insights is an iterative and collaborative process.

I consider myself and extremely reliable modeler, programmer, developer and have extensive experience in what it takes to make the solution become a in-production reality. I do not think it is enough to have the conception of an idea. Some knowledge has to be drawn or quickly identify there is no further insight to be drawn and the decision to move to the next valuable project must be made.

My stack of skills and knowlege is known in my company. I have the ability to think like a mathematician, program a proof-of-concept, source data, identify where the final product will live, deploy and maintain.

Also interested in computational methods to analyze Multiplexed Immunofluorescence image data. Specifically, I'm interested in spatial methods to draw insights from point-process patterns.

## Employment History

`2020 - Present` *Sr Analytics Engineer, Occidental Petroleum Corporation*

`2016 - 2020` *Mathematical Scientist, Occidental Petroleum Corporation*

## Education

`2010 - 2015` **PhD Applied Mathematics, Iowa State University.**

`2009 - 2010` **Graduate Research Position, Kobe University**

`2005 - 2009` **BS Mathematics, University of Texas Pan-American**

## Professional Experience & Skills

- Extensively apply a variety of statistical techniques (e.g. Machine Learning, Bayesian Analysis, Pattern Recognition, Survival Analysis, Signal and Image Processing, etc) and numerical techniques (e.g. numerical solutions to PDEs and ODEs, etc)
- Examples of topics I have covered in Oil&Gas ignoring smaller contributions:
  - Numerical Simulation to monitor of Rod Pump performance (dynacard)
  - Modeling and Optimization of Completion Designs. From data sourcing, processing, modeling, optimization, app design/programming and deployment.
  - ESP performance modeling and analysis.

  - Analysis of well test durations.
  - Optimization of chemical processes.
  - Automating file data extraction using various techniques.
  - CO2 and Waterflood analysis and visualization.
  - Tools for maintaining databases of completion data.
  - Interface for RTA data retrieval and analysis.
  - Tools for geological and petrophysical logs.
  - HES dashboards and automated reports.
  - Tool for quick visualization and labeling of frac hits.
  - Tool for optimization of frac performance.

- Extensive experience delievering solutions via web applications such as Shiny. Some experience as systems admins. In my new role I am responsible for maininting and expanding the Linux servers we use to deploy our team's tools.
- I have experience consulting and advicing a researcher at the Translational Molecular Pathology Lab at MD Anderson in a variety of data processing and statistical analysis. We have collaborated in a variety of research projects.
- Taught and designed courses at Mercy College in Mathematics and Statistics.
- While at the IMA Math Modeling Workshop in Vancouver during the summer of 2014, I worked on Team 3 with Dr Apo Sezginer of KLA-Tencor. Our project title was "Fast Calculation of Diffraction by Photomasks".
- Attended Kobe University in Kobe, Japan from fall 2009 to summer 2010 as a research student where I studied with Dr Yasuhiro Ohta.

## Computer Skills

- Scripting Languages: `Python`, `R`, `Julia`, `Matlab`, `Mathematica`, `Haskell`
- Particularly expert knowledge of the `R Shiny` package.
- Very good knowleged of the `Stan` language specially wrapped in `Rstan`.
- `Python` packages of interest: `Scikit-Learn`, `Numba`, `Fenics`, `PyMC3` and `opencv`.
- Basic knowledge of `Docker` technology.
- Comfortable with maintaining large code-base and use of `git` for version control.
- Some experience in `C++` and `C#`.

## Teaching Experience

- ISU: Calculus I-III, College Algebra, Discrete Math for Business and Social Sciences
- Mercy College: Math for General Sciences, College Algrab and Biostatistics.

## Publications

- (with S. Hansen) *Modeling of a heat equation with a Dirac density.* Submitted to *Proceedings of Dynamic Systems and Applications.*
- (with S. Hansen) *Null boundary controllability of a 1-dimensional heat equation with an internal point mass.* Submitted to *Systems & Control Letters.*

## Honors and Awards

- Robert J. Lambert Applied Mathematics Research Award, Fall 2015.
- Alliances for Graduate Education and the Professoriate (AGEP) fellowship recipient, Fall 2010 - Spring 2015.

- NSF funding for Travel and Lodging to attend SEARCDE 2014.
- IMA funding to attend Math Modeling Workshop at the University of British Columbia the summer of 2014.
- Funding for Travel and Lodging to attend SACNAS National Conference on 2008, 2011 and 2013.
- Early Research Initiative with Dr. Kenichi Maruno at the University of Texas Pan-American, Fall 2008.

## Talks and Posters

- Modeling and controllability of a heat equation with singular density, AMS Southeastern Sectional Meeting, University of Memphis, October 17, 2015.
- Modeling and controllability of a heat equation with singular density, Seventh International Conference on Dynamic Systems and Applications, Atlanta Georgia, May 27-30, 2015.
- Boundary and null controllability of the 1-D heat equation, SIAM Graduate Student Seminar, Iowa State University, October 8, 2014.
- Boundary controllability of the 1-D heat equation with an interior point mass, Southeastern-Atlantic Regional Conference on Differential Equations, University of Memphis, October 11, 2014.
- Controllability and Regularity of Some one-dimensional Thermal Systems with Internal Point Masses, SACNAS National Conference, San Antonio Texas, October 2013.
- Ultra-discrete dynamical systems and cellular automata (Poster), SACNAS National Conference, Salt Lake City, October 2008.

## Conferences and Workshops

- Southeastern-Atlantic Regional Conference on Differential Equations, University of Memphis, October 11, 2014.
- IMA Annual Program Year Workshop Mathematical Modeling in Industry XVIII, August 2014.
- Graduate College STEM Program Climate Workshop, February 2014, Mathematics Graduate Student Representative.
- Field of Dreams Conference, Mesa Arizona, November 2013.
- SACNAS National Conference, San Antonio Texas, October 2013.
- The AfterMath Conference, Harvey Mudd College, February 2013.
- SACNAS National Conference, San Jose California, October 2011.
- SACNAS National Conference, Salt Lake City Utah, October 2008.
- Iowa Mathematical Field of Dreams Conference, October 2008.