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**ACT2019 application**

1 message

**Jp marin diaz** <jpmarindiaz@randommonkey.io>  
To: act2019school@gmail.com

Wed, Jan 30, 2019 at 7:12 PM

Dear ACT2019 selection committee

I don't have a PhD, nor am I pursuing one. Other than skimming through category theory books I don't have a lot of experience in category theory. But please do keep reading.

I am an electrical engineer from Colombia. Did my masters at ETH Zurich (2010) in machine learning and information processing topics. For my masters thesis I connected the dots of Karl Popper's philosophy of science with statistics to come up with an empirical measure of statistical models complexity. It was tested on probabilistic graphical models, one flavor called Factor Graphs, closely related to Bayesian Networks (I can send you the pdf of my masters thesis if interested. MSc thesis: Signal Modelling with Likelihood Computations and Popper Complexity - A Factor Graph Approach Using Linear State Space Models).

After graduation I came back to Colombia and became interested in using data for decision making at all levels. I was named a Network Fellow at Harvard Ethics department for a solution to use Big Data to tackle institutional corruption (using a complex networks approach). For the past 8 years I have been creating software to automate data science. More than solutions I have questions and prototypes built to answer them through code (preferably using functional programming). I mainly use R, started learning Haskell but now moving all my code to Rust.

I am confident the challenges I have automating data science have solutions or at least promising exploration paths in category theory.

- 1 - I built a recommendation engine for visualization types. It is based on a concept I thought of, homodatum. Where data types for computers (booleans, strings, integers) translate into data types for Humans (people, countries, numbers, money).
- 2 - Efficient data processing and analysis has been done in the past few years using "data frames", basically type rectangular data structures. Through compositions and transformations these data pipelines provide straightforward (computational) paths to answer specific questions decision makers have (literal questions).
- 3 - The link between points 1 and 2 above comes to light when the universe of answerable questions (literal) emerge themselves as computations on typed-data-pipelines.

I'd love to be part of the course so I can experience and learn the latest advances in Category Theory so we can implement them in real world scenarios, specifically in data science and machine learning. Something valuable that I bring to the table is innovative thinking with the use of science and tech to tackle issues with tools that are not familiar, specially in the social sciences. Therefore I would love for ACT2019 to help me advance science with real world applications and foster my career as an applied hacker.

If accepted I can commit to come to Oxford for the Conference, will try to look for funding at through my company or through some partners.

Looking forward to join you at ACT2019.

My preferred selection of topics is:

- Complexity classes, computation, and Turing categories
- Formal and experimental methods to reason about dialogue and discourse using categorical models of vector spaces
- Traversal optics and profunctors
- Toward a mathematical foundation for autopoiesis

1/30/2019

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- No particular preference for the others

Find attached my CV.

Best

Juan Pablo Marín Díaz

@jpmarindiaz



**CV jpmarindiaz 2019-01.pdf**

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## Contact Info

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## Skills

Entrepreneurship  
Software Development  
Research  
Project Management  
Data Analysis  
Complex networks  
R  
Signal Processing  
Statistics  
Machine Learning Algorithms

## Languages

**English**

Full professional proficiency

**Spanish**

Native

**Portuguese**

Intermediate proficiency

Entrepreneur, reader, traveler. My line of thought is aimed at seeking always for novel approaches to solve problems under strong analytical and theoretical basis for model construction and empirical basis for model selection and testing. Pragmatic, skeptic, curious.

## EXPERIENCE

### ICFJ Fellow - Latin America Program

April 2016 - May 2016. San Francisco, California.

ICFJ Fellowship for data journalism. Implementation of machine learning algorithms to map relationships among politicians around Trump's administration. Taught workshop on how to lie with data and structuring databases.

### Founder and CEO at Random Monkey

June 2015 - Present (8 months). Bogota - Colombia.

Data Science consultancy services. We develop data products to interact and visualize data in specific industries, along with report generation for decision making. Platform for developers to build data science apps.

Founding of data journalism portal <http://datasketch.co> for showcasing DDJ resources and providing self service tools around open data and data visualization.

### Co-Founder and CIO - Chief Innovation Officer at Aentropico Inc

January 2012 - December 2014 (3 years). Bogota - Colombia, Santiago - Chile and Rio de Janeiro - Brazil.

Data services and consultancy for customers in different industries in Latin America, with operations in Colombia and Brazil.

### Edmond J. Safra Network Fellow at Harvard University

September 2012 - June 2013 (10 months).

Non-residential fellowship. Work on a computational statistics based system to monitor institutional corruption featuring interactive visualizations and written content about data science applications.

### Founder and President at Latin America Innovation Foundation

March 2011 - Present (4 years 11 months). Bogota - Colombia.

Platform for democratizing and analyzing innovation policies in Latin American society. Featuring macroeconomic data and institutional network analysis. Inoperative at the moment.

### Research Assistant at Center for Economic Research and Signal and Information Processing Laboratory ETH Zurich

October 2008 - March 2009 and June 2010 - August 2010. Zurich - Switzerland.

Reviewing of economic papers and models, and performing simulations. Focused on different topics including growth theory, game theory, competition and public policies. Research on Factor Graphs and Information Theory with applications to Statistical Signal Processing for non-linear robust regression, classification and model selection.

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### Adjunct Professor at Pontificia Universidad Javeriana

October 2011 - June 2012 and July 2007 - July 2008. Bogota - Colombia.

Electronic Engineering undergraduate courses on Signals And Systems, Data Processing. Music studies undergraduate course on Audio Processing.

### IT Specialist at IBM Global Services

July 2005 - July 2008 (3 years 1 month). Bogota - Colombia.

Technical and leadership role in software solutions and systems integration for customers in Banking and CPG markets. Assisting in delivery of high quality solutions to clients in response to specific business requirements.

## EDUCATION

### Eidgenössische Technische Hochschule Zürich - ETH Zurich

Swiss Federal Institute of Technology - Zurich

MSc. Electrical Engineering and Information Technology.

Zurich, Switzerland, 2008 - 2010.

### Pontificia Universidad Javeriana

Engineer, Electronic Engineering.

Bogota, Colombia, 2001 - 2007.

## PUBLICATIONS

Real Time Motion Tracking by Seismic Wave Analysis. Image and Signal Processing and Analysis, 2007. ISPA 2007. September 29, 2007. Authors: Juan Pablo Marin Diaz and Oscar Reina.

A model for quasi-periodic signals with application to rain estimation from microwave link gain. 19th European Signal Processing Conference (EUSIPCO 2011) September 2, 2011. Authors: Juan Pablo Marin Diaz, Chistoph Reller, Hans-Andrea Loeliger.

## HONORS AND AWARDS

Swiss Federal Government Scholarship Holder 2008-2010.

Innocentive Challenge winner: Systems to monitor institutional corruption organized by the Harvard Ethics.

DSP Design Contest 2005. Atmel Roma Srl. Selected among the 12 most original projects worldwide.

## OTHER ACTIVITIES

I had the chance to participate with my company in different entrepreneurship programs: Startup Chile in 2012, Startup Brazil in 2013 and Masschallenge in Boston 2013.

After the program I was recruited to be part of an elite group of experts to judge Start-Up Chile's applications of other startup companies looking for seed funding (no equity). I am very proud of the incredible impact of this program bringing over 1000 entrepreneurs to Chile while also inspiring both local startups and also other countries to replicate and innovate on this important program.

## REFERENCES

References upon request.

