

## Education

### PhD | Industrial Electronics

Luleå University of Technology |  
2013-2017

- Research: Unsupervised Feature Learning
- Advisors: Fredrik Sandin and Jerker Delsing

### MSc | Space Science and Technology

SpaceMaster Dual-degree Program |  
2010-2012

- Luleå University of Technology (Sweden)
- Julius Maximilian University of Würzburg (Germany)

### BSc | Mechatronics Engineering

ITESM | 2002-2007

- Monterrey Institute of Technology and Higher Education (Mexico)

## Skills

### Languages

english (advanced) • spanish (native) • swedish (intermediate)

### Programming languages

matlab • python • c/c++ • sql

### Frameworks

numpy • pandas • scikit-learn • matplotlib

### Software

Microsoft Office •  $\LaTeX$  • OrCad • Unigraphics

### Certifications

Six Sigma Green Belt (DMAIC)

## Awards

Jacob Wallenbergs Foundation (2015)

Nordea Norrlandsstiftelse (2014)

Bengt Hultqvist Prize/Scholarship (2012)

## Volunteer experience

Science and Technology

Coordinator, *Global Mexican Talent Network – Chapter Sweden* (2014 - Present)

## Profile

Post-doc in machine learning focused on applied artificial intelligence, in particular, unsupervised feature learning for industrial processes. Working as a researcher that promotes machine learning and data science as tools to generate opportunities, create solutions and improve processes, which benefit organizations and individuals.

## Experience

### Luleå University of Technology | Post-doc

2018 - Present | Luleå, Sweden

- enabled automatic identification of operational anomalies of wind turbines
- analysis of signals using convolutional sparse coding and dictionary learning
- investigated big data collection and method generalization strategies
- supervisor to students' master thesis

### Luleå University of Technology | PhD studies

2013 - 2017 | Luleå, Sweden

Thesis - *Unsupervised Feature Learning Applied to Condition Monitoring*

- investigated unsupervised methods for feature learning that function online
- produced methods to validate normal conditions and detect abnormalities
- main contribution is a set of indicators derived from dictionary learning
- lead teaching assistant in the electrical circuits course with 70+ students

### Swedish Institute of Space Physics | Intern

2011 - 2012 | Kiruna, Sweden

- reconstructed the raw data from ASPERA instrument on Phobos-2 mission
- interpreted energy/mass measurements taken by ion mass spectrometer

### General Electric – Aviation | Design Engineer

2007 - 2010 | Queretaro, Mexico

- led failure investigations, root cause analyses and components certification
- component leader for service actions and systems integration

## Publications

- S. Martin-del-Campo, F. Sandin, and S. Schnabel, *Kinematic frequencies of rotating equipment identified with sparse coding and dictionary learning*, Prognostics and Health Management Society (PHM) Conference, Scottsdale, AZ, USA, Sep, (2019)
- S. Martin-del-Campo, F. Sandin, and D. Strömbergsson, *Dictionary learning approach to monitoring of wind turbine drivetrain bearings*, arXiv:1902.01426 [eess.SP], (2019), under review in Mechanical Systems and Signal Processing
- S. Martin-del-Campo, S. Schnabel, F. Sandin and P. Marklund, *Detection of particle contaminants in rolling element bearings with unsupervised acoustic emission feature learning*, Tribology International, vol. 132, pp. 30-38 (2019)
- S. Martin-del-Campo and F. Sandin, *Online feature learning for condition monitoring of rotating machinery*, Engineering applications of artificial intelligence, vol. 64, pp. 187-196 (2017)
- F. Sandin and S. Martin-del-Campo, *Dictionary learning with equiprobable matching pursuit*, International Joint Conference on Neural Networks (IJCNN), Anchorage, AL, USA, May 14-19, (2017)
- S. Martin-del-Campo, F. Sandin, S. Schnabel, P. Marklund and J. Delsing, *Exploratory analysis of acoustic emissions in steel using dictionary learning*, IEEE Ultrasonics Symposium (IUS), Tours, FR, Sep 18-21, (2016)
- S. Martin-del-Campo and F. Sandin, *Towards zero-configuration condition monitoring based on dictionary learning*, European Signal Processing Conference (EUSIPCO), Nice, FR, Aug 31-Sep 4 (2015)
- S. Martin del Campo B., K. Albertsson, J. Nilsson, J. Eliasson and F. Sandin, *FPGA prototype of machine learning analog-to-feature converter for event-based succinct representation of signals*, Machine Learning for Signal Processing, IEEE International Workshop on, Southampton, UK, Sep 22-25, (2013)