Rodrigo Lopez-Farias, Ph.D. *Computer Science and Engineering*

PERSONAL INFORMATION	Birthday: 8/Jul/1984	e-mail: rdglpz@gmail.com
	Residence: Corregidora, Queretaro	Cellphone: +52 443 155 5416
		Skype ID: rdglpz

CURRENT JOB Associate researcher of the National Council on Science and Technology (CONACyT) commissioned and working at the Center for Research of Geo-spatial Information Sciences (CentroGeo) (Since Nov 2017).

GRANTS AND DISTINCTIONS Member of the Mexican System of Researchers (SNI) Level 1.

INTERESTS & SKILLS

Programming and Data Base Managing Languages
Python, R, Matlab, Mathematica, Java, C/C++, PHP-HTML-MySQL(SQL), CassandraDB (NoSQL, Cassandra Query Language).

Research
Time and Spatio-temporal series models and prediction with machine learning applied to problems related to urban development (such as land use change, air, and light pollution). Multi-Model Prediction with probabilistic model selection. Heuristics for global and non-convex optimization applied to System Identification in Biology Systems.

Research groups and projects
Network of Applied Computational Intelligence. https://goo.gl/7B4RcE.
Mexican Society of Computer Science A.C. From August 2020 - to August 2022 (Renovation pending)

Languages
English: 577 ITP TOEFL points.
Italian: B1 Common CEFRL Level.

ACADEMIC DEGREE

Ph.D. in Computer Science and Engineering. (With European Doctorate mention).
Institute: IMT School of Advanced Studies Lucca. Lucca, Italy. *(Feb/2012 - Jan/2016)*.
Thesis: Time Series Forecasting Based on Classification of Dynamic Patterns.
Advisors: Ph.D. Alberto Bemporad. Ph.D. Pantelis Sopasakis.
Field of study: Time series analysis and modelling with machine learning.
Taken Courses: Semantics and formal methods. Algorithmic complexity. Basic linear algebra. Principles of parallel and concurrent computing. Performance modelling applied to Computer Networks. Specification, modelling and verification of reactive systems. Introduction to global and local optimization. Model checking. Optimum control, (Optimization Algorithms). Programming Methodologies with Python. Cloud Computing. Theory of complex networks. Machine Learning.

M.Sc. in Electrical Engineering (Computer Systems Group).
University: Michoacan University of San Nicolas de Hidalgo. (Universidad Michoacana de San Nicolas de Hidalgo). Morelia, Mexico. *(Mar/2008 - Aug/2010)*.
Thesis: Bifurcation Diagrams for Discontinuous or Non-differentiable Equations.
Advisors: Ph.D. Juan Jose Flores Romero, Ph.D. Claudio Fuerte E.

Field of study: Evolutionary computing, unconstrained global optimization, nonlinear dynamical systems, stability analysis.

B.Eng. in Computer Systems.
Institute: Morelia Institute of Technology (Instituto Tecnológico de Morelia). Morelia, Mexico. *(2002-2007)*.
Thesis: Implementation and performance analysis of **"Linux Terminal Server Project"** for educational purposes.
Field of Study: Applications of distributed operative systems.

ACADEMIC
EXPERIENCE

Teaching.

Center for Research of Geo-spatial Information Sciences, CentroGeo (Postgraduate Course). Mexico City.
- Deep Learning *(9/May/2022 - 26/Aug/2022)*.

National Autonomous University of Mexico (UNAM - ENES). Morelia, Mexico.
- Object based image classification using neural networks *(Feb/2021 - Aug/2021)*.

Queretaro Institute of Technology. Queretaro, Mexico.
- Internet of things (Computer Systems Engineering). *(Jan/2020 - May/2020)*.

Morelia Institute of Technology. Morelia, Mexico.
- Programming (Electrical Engineering), Programming and Algorithms (Mechanical Engineering), Algorithms and Programming Languages (Industrial Engineering), Operative Systems II (Engineering Informatics)), Programming II (Electronic Engineering). *(Aug/2011 - Jan/2012)*.
- Data structure and Organization (Information and Communication Technologies Engineering),Database fundamentals (Computer Systems Engineering) and Evaluation of software projects (Engineering Informatics). *(Jan/2011 - Jul/2011)*.
- Operative systems, selected topics of programming and research fundamentals(Computer Systems Engineering). *(Aug/2010 - Dec/2010)*.

University of Morelia (Universidad de Morelia). Morelia, Mexico.
- Web programming with PHP. *(Aug/2009 - Dec/2009)*.

PROFESSIONAL
EXPERIENCE

Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV)
Department: Coordination and administration of Information and Communication Technologies Services (CGSTIC)
Activity: Application of machine learning algorithms for commercial conversational agents. Mexico City. (Oct/2016 - July/2017).

Michoacan University of San Nicolas de Hidalgo. (Oct/2015 - Oct/2016)
Department: Computer Center and University Information processes.
Activity: Web manager, programmer and collaborator for decision making for an efficient administration of university information.

Center for Information and Communications Technologies (CETIC). *(Mar/2007 - Jun/2007)*. Morelia, Mexico.
Department: Infrastructure department.
Activity: Professional training in the project Performance analysis of **Linux Terminal Server Project** applied to to basic education.

Morelia Institute of Technology. Morelia, Mexico. *(Feb/2007)*
Activity: Social Service Project: Web catalog with PHP for Social Service.

PUBLICATIONS **Articles in Journals included in Journal Citation Reports**

Accepted
- **Application of network theory to study spatio-temporal evolution in the weekend effect in urban areas** *Iván Y. Hernández-Paniagua, Rodrigo López Farías, Juan A. Pichardo Corpus.* Atmósfera. doi: https://doi.org/10.20937/ATM.52993
- **Spatio-temporal Networks of light pollution** *Pichardo Corpus, Juan. A. and Solano-Lamphar, Hector and Lopez-Farias, Rodrigo, Delgadillo-Ruiz, Olivia.* Journal of Quantitative Spectroscopy and Radiative Transfer. (June/2020).
- **Soft Computing Methods with Phase Space Reconstruction for Wind Speed Forecasting—A Performance Comparison** *Flores, Juan. J. and Cedeño González, José R. and Rodríguez, Héctor and Graff, Mario and Lopez-Farias, Rodrigo and Calderon, Felix.* Energies. (doi: 0.3390/en12183545) (Sept/2019).
- **Increasing weekend effect in ground-level O3 in metropolitan areas of Mexico** *Iván Y. Hernández-Paniagua, Rodrigo Lopez-Farias, Jose J. Piña, Luis G. Ruíz-Suárez, Juan A. Pichardo-Corpus, Olivia Delgadillo, Agustín García-Reynoso, Arnoldo Flores-Torres, Alberto Mendoza.* Sustainability. (doi: 10.1109/ROPEC.2017.8261647) (Aug/2018).
- **Multi-Model Prediction for Demand Forecast in Water Distribution Networks** *Rodrigo López Farías, Vicenc Puig, Héctor Rodriguez Rangel, Juan J. Flores* Energies. doi:10.3390/en11030660. (Mar/2018).
- **Evolving Nearest Neighbor Time Series Forecasters.** *Juan J. Flores, José Cedeño Gonzalez, Rodrigo López Farías, Félix Calderón* . Journal of Soft Computing, DOI : 10.1007/s00500-017-2822-1. (Sept/2017).
- **Short-Term Demand Forecast using Bank of Neural Network Models Trained using Genetic Algorithms for the Optimal Management of Drinking Water Networks.** *Hector Rodriguez Rangel, Vicenç Puig, Rodrigo López Farías, Juan J. Flores.* Journal of Hydroinformatics. DOI: 10.2166/hydro.2016.199. ISSN: 1464-7141 (Nov/2016).

Under Review
- **A Systematic Literature Review on Satellite Image Time Series Forecasting: Methods and Applications for Remote Sensing**. Carlos Lara-Alvarez, Juan J Flores, Hector Rodriguez-Rangel, Rodrigo Lopez-Farias (Corresponding). Artificial Intelligence Review. Sent in July 2022.
- **Optimization of Sensor Locations for a Light Pollution Monitoring Network**. Rodrigo Lopez-Farias, Jorge Paredes-Tavares, Hector Lamphar (Corresponding). Journal of Quantitative Spectroscopy and Radiative Transfer. Sent in July 2022.

Other Important Journals
- **Pronóstico de series de tiempo de imágenes de sequías utilizando Autocodificadores y Redes Neuronales.** Manuel Medrano, Juan J Flores Romero, Hector Rodríguez (Corresponding), Rodrigo López Farías and Carlos Lara Álvarez.

Research in computer Science. ISSN 1870-4069. July 2021.

Peer Reviewed Articles in Scientific and Technologic Divulgation Mexican Journals

Accepted
- **Sistema de Medición de Flujos de Agua Tolerante a Fallos en Redes de Distribución de Agua Potable Utilizando Inteligencia Artificial**, *H. Rodríguez Rangel, R. López Farías, G. Manjarrez Montelongo*, L. A. Morales Rosales y G. E. Peralta Peñuñuri. Komputer Sapiens, KS año 9 vol. 2, KS92, 2017, (Latin index).

Peer Reviewed Accepted Articles in National and International Conferences

- **Parameter Calibration of the Patch Growing Algorithm for Urban Land Change Simulations** Rodrigo López Farías, Sergio I. Valdez Peña, Alberto García Robledo. . IEEE Encuentro Nacional de Computación 2021,
  (doi: 10.1109/ENC53357.2021.9534789.). `https://bit.ly/2WXOTPm`. Morelia, México, August 2021.
- **A methodology for a light pollution network with optimal sensor location** Héctor Lamphar, Rodrigo López Farías. Artificial Light At Night 2021, `https://bit.ly/3xCXSn6`. Spain, June 2021.
- **Automatic Modelling of Land Use Suitability Using Deep Feedforward Networks with Leon and Silao, Guanajuato Region Data** *Rodrigo López-Farías, Juan A. Pichardo-Corpus, Raúl A. Aguilar-Vilchis.* (ISSN: 2515-1762). International Conference on Geospatial Information Sciences 2019, **Merida, México, Oct/2019**. `http://bit.ly/2KHxelY`
- **Adaptive Nearest Neighbors Phase Space Reconstruction for Short-Time Prediction in Chaotic Time Series** *Rodrigo López-Farías, José R. Cedeño Gonzalez, Olivia Delgadillo Ruiz, Juan J. Flores.* (ISBN-13: 9781941763957) .The 10th International Multi-Conference on Complexity, Informatics and Cybernetics, **Orlando, USA, March/2019**.
- **Parameter Identification and Qualitative Analysis with Differential Evolution of the Calcium Standard Kinetics Model** *Norma C. Perez-Rosas, Rodrigo López-Farías, Agustín Guerrero-Hernández and Juan J. Flores.* (DOI: 10.1109/ROPEC.2017.8261647) .IEEE Autumn Meeting on Power, Electronics and Computing, **Ixtapa México, Nov/2017**.
- **Comparison of Time Series Forecasting Techniques with respect to Tolerance to Noise.** *Juan J. Flores, Felix Calderon Solorio, Jose Rafael Cedeño Gonzalez, Jose Ortiz Bejar and Rodrigo Lopez Farias.* (Pendiente) .*IEEE Autumn Meeting on Power, Electronics and Computing*, **Ixtapa Mexico, Nov/2016**.
- **Holt-Winters Residual Modelling using an ANN trained by GA and Time Series Validation Applied to Water Demand Forecasting** *Hector Rodriguez-Rangel, Vicenç Puig, Juan J. Flores and , Rodrigo López* Farías.. (Pending). **3rd International Conference on Control and Fault-Tolerant Systems Barcelona, Spain. Sept/2016**.
- **Flow meter Data Validation and Reconstruction using Neural Networks: Application to the Barcelona Water Network** *Hector Rodriguez Rangel, Vicenç Puig,Juan J. Flores and , Rodrigo López Farías..* `https://goo.gl/i7muz7`. **2016 European Control Conference, Aalborg. June/2016**.
- **Qualitative and Quantitative Mul** *Rodrigo López Farías, Juan J. Flores and Vicenç Puig.* ti-Model Forecasting with Nonlinear Noise Filter Applied to Water Demand *IEEE Autumn Meeting on Power, Electronics and Computing.* DOI: 10.1109/ROPEC.2015.7395122. **Ixtapa Mexico, Nov/2015**.

- **FNN a Fuzzy Version of the Nearest Neighbour Time Series Forecasting Technique** *Juan J. Flores, Jose Ortiz Bejar, Jose Rafael Cedeño, Carlos Lara-Alvarez and Rodrigo López Farías. IEEE Autumn Meeting on Power, Electronics and Computing.* DOI: 10.1109/ROPEC.2015.7395125. **Ixtapa Mexico, Nov/2015** .
- **A Multiple-Model Predictor Approach Based on an On-Line Mode Recognition with Application to Water Demand Forecasting** *Rodrigo López Farías, Vicenç Puig. International work-conference on Time Series 1.* URI https://goo.gl/njWQ1e. **Granada Spain, Jul/2015**.
- **An implementation of a multi-model predictor based on the qualitative and quantitative decomposition of the time-series.** *Rodrigo. López, Vicenç Puig, Hector Rodriguez.* URI http: //hdl.handle.net/2117/81862. *International work-conference on Time Series 1* **Granada Spain, Jul/015**.
- **Optimization with gravitational Interactions** *Dr, Juan Flores, Rodrigo López, Julio Barrera. ROPEC XIII: Autumn Meeting of Electric power systems, electronic and computation (Reunión de Otoño de Potencia, Electronica y Computacion)* **Morelia Mexico, November 2011**.
- **Gravitational Interactions Optimization.** Juan Flores, Rodrigo Lopez, Julio Barrera. *Learning and Intelligent OptimizatioN* (LION 5) DOI 10.1007/978-3-642-25566-3_17. **Rome, Italy - Jan/2011**.
- **Particle swarm optimization with gravitational interactions for multimodal and unimodal problems.** Juan J. Flores, Rodrigo Lopez and July Barrera. In *Proceedings of the 9th Mexican International Conference on Artificial Intelligence (MICAI 2010)*, pages 3361-370. Springer-Verlag. DOI 10.1007/978-3-642-16773-7_31. **Pachuca, Mexico. November/2010.**