Federal University of Uberlândia
School of Chemical Engineering
Laboratory of Modeling, Simulation, Control and Optimization
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CURRICULUM VITAE

1. General Information

Fran Sérgio Lobato was born in Araguari, Brazil, in 1976. He received the chemical engineer degree, master of science degree in chemical engineering, and the doctor degree in mechanical engineering from the Federal University of Uberlândia, Brazil, in 2001, 2004 and 2008, respectively. During the year of 2009 he worked in the Federal University of São João Del Rei, Brazil. Since 2010, he has been an Assistant Professor in the School of Chemical Engineering at the Federal University of Uberlândia. His current research interests include bio-inspired optimization algorithms, optimal control theory, and formulation and solution of inverse problems.

2. Academic Degrees

- Chemical Engineer, Federal University of Uberlândia, Brazil (1997-2001).
- Master of Science in Chemical Engineering, Federal University of Uberlândia, Brazil (2002-2004).
- Doctor in Mechanical Engineering, Federal University of Uberlândia, Brazil (2005-2008), with the thesis entitled *Multi-objective Optimization for Engineering System Design*.

3. Most Relevant Publications

3.1 Edited Books

- LOBATO, F. S.; STEFFEN Jr, V. Multi-Objective Optimization Problems Concepts and Self-Adaptive Parameters with Mathematical and Engineering Applications, 2017, ISBN 978-3-319-58565-9, 160 pages, Springer International Publishing.
- LOBATO, F. S.; BORGES, R. A.; STEFFEN Jr, V. Bio-inspired Optimization Methods - Modeling, Design, Inverse Problem and Robust Optimization of a Representative Mechanical System, (1), 2015, ISBN 978-3-659-81486-0, 80 pages, LAP Lambert Academic Publishing.

3.2 Book Chapters

- LIBOTTE, G. B.; MOURA NETO, F. D., LOBATO, F. S.; PLATT, G. M. Second-Order Inverse Reliability Analysis: A New Methodology to the Treatment of Reliability in Engineering System . EngOpt 2018 Proceedings of the 6th International Conference on Engineering Optimization, (1), 2019. Edited by Rodrigues H. et al., ISBN 978-3-319-97773-7, Springer International Publishing.
- LOBATO, F. S.; SILVA, M. A.; CAVALINI, A. Ap.; STEFFEN JR, V. Reliability-Based Robust Optimization Applied to Engineering System Design. Computational Intelligence, Optimization and Inverse Problems with Applications in Engineering, (1), 2018. Edited by Gustavo Mendes Platt, Xin-She Yang and Antônio J. da Silva Neto, ISBN 978-3-319-96432-4, Springer International Publishing.
- GONCALVES, R. S.; CARVALHO, J. C. M.; LOBATO, F. S. Workspace Analysis of a Parallel Manipulator Using Multi-objective Optimization and Bio-inspired Methods. Multibody Mechatronic Systems, (1), 107-115, 2018. Edited by Carvalho J., Martins D., Simoni R., Simas H., ISBN 978-3-319-67567-1, Springer International Publishing.

- SOUZA, D. L.; GEDRAITE, R.; LOBATO, F. S. A Comparative Study using Bio-Inspired Optimization Methods Applied to Controllers Tuning. Frontiers in Advanced Control Systems, (1), 7-27, 2012. Edited by Ginalber Luiz de Oliveira Serra, ISBN 978-953-51-0677-7, InTech.

- LOBATO, F. S.; LUGON JR, J.; BIONDI-NETO, L.; SANTANA, C. C.; SOEIRO, F. J. C. P.; STEFFEN Jr, V.; SILVA-NETO, A. J. Application of Simulated Annealing and Hybrid Methods in the Solution of Inverse Heat and Mass Transfer Problems. Simulated Annealing, Theory with Applications, (1), 2-36, 2010. Edited by Rui Chibante, ISBN 978-953-307-134-3, Sciyo.

3.3 Papers Published in International Journals

- LOBATO, F. S.; LIMA, W. J.; BORGES, R. A.; CAVALINI JR, A. Ap.; STEFFEN JR, V. **The Solution of Direct and Inverse Fractional Advection-Dispersion Problems by using Orthogonal Collocation and Differential Evolution**. *Soft Computing*, 1(1), 1-11, 2019.

- LOBATO, F. S.; SILVA, M. A.; CAVALINI JR., A. Ap.; STEFFEN JR., V. **Reliability-Based Multi-objective Optimization Applied to Chemical Engineering Design**. *Brazilian Journal of Chemical Engineering*, 36(1), 317-333, 2019.

- DOURADO, A. P.; LOBATO, F. S.; CAVALINI JR., A. Ap.; STEFFEN JR., V. **Fuzzy Reliability-Based Optimization for Engineering System Design**. *International Journal of Fuzzy Systems*, 1(1), 1-12, 2019.

- LIMA, W. J.; LOBATO, F. S.; AROUCA, F. O. **Solution of Inverse Anomalous Diffusion Problems using Empirical and Phenomenological Models**. *Heat and Mass Transfer*, 1(1), 1-20, 2019.

- SILVA, C. A. X.; TAKETA, E; KOROISHI, E. H; LARA-MOLINA, F. A.; FARIA; A. W.; LOBATO, F. S. **Determining the Parameters of Active Modal Control in a Composite Beam Using Multi-objective Optimization Flower Pollination**. *Journal of Vibration Engineering & Technologies*, 1(1), 1-20, 2019.

- LOBATO, F. S.; SILVA, M. A.; CAVALINI JR., A. Ap.; STEFFEN JR, V. **Reliability-based Robust Multi-objective Optimization Applied to Engineering System Design**. *Engineering Optimization*, 1(1), 1-21, 2019.

- LOBATO, F. S.; GONCALVES, M. S.; JAHN, B.; CAVALINI JR; A. Ap., STEFFEN JR., V. **Reliability-Based Optimization Using Differential Evolution and Inverse Reliability Analysis for Engineering System Design**. *Journal of Optimization Theory and Applications*, (1), 1-33, 2017.

- GONCALVES, R. S.; CARVALHO, J. C. M.; LOBATO, F. S. **Design of a Robotic Device Actuated by Cables for Human Lower Limb Rehabilitation using Self-Adaptive Differential Evolution and Robust Optimization**. *Bioscience Journal*, (32), 1689-1702, 2016.

- MOREIRA, F. R.; LOBATO, F. S.; CAVALINI JR, A. Ap.; STEFFEN JR, V. **Robust Multi-objective Optimization Applied to Engineering Systems Design**. *Latin American Journal of Solids and Structures*, (13), 1802-1822, 2016.

- LOBATO, F. S.; MACHADO, V. S.; STEFFEN JR, V. **Determination of an Optimal Control Strategy for Drug Administration in Tumor Treatment using Multi-objective Optimization Differential Evolution**. *Computer Methods and Programs in Biomedicine*, (131), 51-61, 2016.

- SOUZA, G. F. M. V.; MIRANDA, R. F.; LOBATO, F. S.; BARROZO, M. A. S. **Simultaneous Heat and Mass Transfer in a Fixed Bed Dryer**. *Applied Thermal Engineering*, (90), 38-44, 2015.

- BARROZO, M. A. S.; LOBATO, F. S. **Multi-objective Optimization of Column Flotation of an Igneous Phosphate Ore**. *International Journal of Mineral Processing*, (146), 82-89, 2015.

- CAVALINI JR, A. Ap.; LOBATO, F. S.; KOROISHIC, E. H.; STEFFEN JR, V. **Model Updating of a Rotating Machine using the Self-Adpative Differential Evolution Algorithm**. *Inverse Problems in Science and Engineering*, (1), 1-12, 2015.

- SOUZA, D. L.; LOBATO, F. S.; GEDRAITE, R. **Robust Multiobjective Optimization Applied to Optimal Control Problems Using Differential Evolution**. *Chemical Engineering and Technology*, (1), 1-8, 2015.
- LOBATO, F. S.; SOUSA, M. N.; SILVA, M. A.; MACHADO, A. R. **Multi-objective Optimization and Bio-inspired Methods Applied to Machinability of Stainless Steel**. *Applied Soft Computing*, (22), 261-271, 2014.
- LOBATO, F. S.; STEFFEN Jr, V. **Fish Swarm Optimization Algorithm Applied to Engineering System Design**. *Latin American Journal of Solids and Structures*, (11), 143-156, 2014.
- SILVA, D. O.; VIEIRA, L. G. M.; LOBATO, F. S.; BARROZO, M. A. S. **Optimization of Hydrocyclone Performance using Multi-Objective Firefly Colony Algorithm**. *Separation Science and Technology*, (48), 1891-1899, 2013.
- BORGES, R. A. ; LOBATO, F. S.; STEFFEN Jr, V. **Application of Three Bio-inspired Optimization Methods for the Design of a Nonlinear Mechanical System**. *Mathematical Problems in Engineering*, (X), 1-12, 2013.
- LOBATO, F. S.; STEFFEN Jr, V. **Multi-Objective Optimization Firefly Algorithm Applied to (Bio)Chemical Engineering System Design**. *American Journal of Applied Mathematics and Statistics*, (1), 110-116, 2013.
- LOBATO, F. S. **Dynamic Optimization Applied to Fed-Batch Fermentation with Phases Identification**. *International Review of Chemical Engineering - Rapid Communications (IRECHE)*, (5), 11-20, 2013.
- LOBATO, F. S.; GEDRAITE, R.; SOUZA, D. L.; KUNIGK, L. **Development of a Computational Algorithm Applied to Calculate the Thermal Diffusivity in Conductive Canned Food**. *International Review of Chemical Engineering - Rapid Communications (IRECHE)*, (5), 61-72, 2013.
- SANTOS, K. G.; LOBATO, F. S.; BARROZO, M. A. S.; MURATA, V. V.; LIRA, T. S.; GIANESELLA, M. **Bagasse Pyrolysis: A Comparative Study on Kinetic Models**. *Chemical Engineering Communications*, (199), 109-121, 2012.
- LOBATO, F. S.; STEFFEN Jr, V.; SILVA-NETO, A. J.; **Estimation of Space-dependent Single Scattering Albedo in a Radiative Transfer Problem using Differential Evolution**. *Inverse Problems in Science and Engineering*, (2), 1-13, 2012
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- LOBATO, F. S.; MALAGONI, R. A.; SOUSA, M. N. **Differential Evolution Algorithm and Response Surface Methodology Applied to Turning Process Optimization**. *Materials Science Forum*, (727), 1854-1859, 2012.
- LOBATO, F. S.; SANTOS, K. G.; LIRA, T. S.; MURATA, V. V.; BARROZO, M. A. S. **Sensitivity Analysis Applied to Independent Parallel Reaction Model for Pyrolysis of Bagasse**. *Chemical Engineering Research and Design*, (90), 1989-1996, 2012.
- LOBATO, F. S.; STEFFEN Jr, V. **A New Multi-objective Optimization Algorithm Based on Differential Evolution and Neighborhood Exploring Evolution Strategy**. *Journal of Artificial Intelligence and Soft Computing Research*, (1), 1-12, 2011.
- LOBATO, F. S.; SILVA-NETO, A. J.; STEFFEN Jr, V. **Solution of Singular Optimal Control Problems using the Improved Differential Evolution Algorithm**. *Journal of Artificial Intelligence and Soft Computing Research*, (1), 1-12, 2011.

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- LOBATO, F. S.; SILVA-NETO, A. J.; STEFFEN Jr, V. **Self-Adaptive Differential Evolution Based on the Concept of Population Diversity Applied to Simultaneous Estimation of Anisotropic Scattering Phase Function, Albedo and Optical Thickness**. *Computer Modeling in Engineering and Sciences*, (1), 1-17, 2010.

- LOBATO, F. S.; SOUSA, J. A.; HORI, C. E.; STEFFEN Jr, V. **Improved Bees Colony Algorithm Applied to Chemical Engineering System Design**. *International Review of Chemical Engineering*, (6), 1-7, 2010.

- ARRUDA, E. B.; LOBATO, F. S.; ASSIS, A. J.; BARROZO, M. A. S. **Modeling of Fertilizer Drying in Roto-Aerated and Conventional Rotary Dryers**. *Drying Technology*, (27), 1192-1198, 2009.

- LOBATO, F. S.; SILVA-NETO, A. J.; STEFFEN Jr, V. **Solution of Inverse Radiative Transfer Problems in Two-layer Participating Media with Differential Evolution**. *Inverse Problems in Science and Engineering*, (18), 183-195, 2009.

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- LOBATO, F. S.; ARRUDA, E. B.; BARROZO, M. A. S.; STEFFEN Jr, V. **Estimation of Drying Parameters in Rotary Dryers using Differential Evolution**. *Journal of Physics*, Conference Series, (135), 1-8, 2008.

- LOBATO, F. S.; OLIVEIRA-LOPES, L. C.; MURATA, V. V. A **Novel Hybrid Optimization Algorithm for Differential Algebraic Control Problems**. *Brazilian Journal of Chemical Engineering*, (24), 445-452, 2007.