

Sergio Peignier

Curriculum Vitae

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Education

- 2014–2017 **Ph.D.**, *INRIA - LIRIS*, Lyon, France.
Computer Science.
- 2013–2014 **M.Sci.**, *ENS*, Lyon, France.
Fundamental Computer Science, specialisation in Complex Systems.
- 2009–2014 **Engineering degree**, *INSA*, Lyon, France.
Bioinformatics and Modelling, **Honorable mention**.

Work Experience

- 2017 **Data Scientist**, *Atos Worldline*, Lille, France, High Performance and Volume R&D Team.
- Deep Learning Methods (LSTM and Autoencoders) for anomaly detection in time-series data.
 - Application to Toro Rosso F1 cars telemetry data for early detection of technical problems.

Research Experience

- 2018 **Postdoctoral Research**, *CMLA - ENS*, Cachan, France, MLMDA team, Mathilde Mougeot and Nicolas Vayatis.
- Project: Industrial data analytics & Machine learning (industrial partners: Atos and CEA).
 - Research on Transfer-Learning methods and their industrial application.
 - Modelling temporal dynamics of diffusion networks.
- 2014–2017 **Ph.D. Research**, *INRIA - LIRIS*, Lyon, France, BEAGLE team, supervised by Christophe Rigotti and Guillaume Beslon.
- European project EvoEvo that aims to study evolution and develop bio-inspired algorithms.
 - Evolutionary Subspace Clustering algorithm for dynamic data streams (SubMorphoStream).
 - K -medians Subspace Clustering algorithm for static datasets (KymeroClust).
 - Bio-inspired evolutionary Subspace Clustering algorithm for static datasets (Chameleoclust).
 - Wi-fi signals analyser based on Evolutionary Algorithms (EvoWave).
 - Evolutionary musical companion for dancers (EvoMove).
- 2016 **Visiting Researcher**, *Faculty of Sciences Universidad Mayor de San Andrés (UMSA)*, La Paz, Bolivia, Collaboration with Heriberto Castañeta Maroni.
- Analysis of high dimensional physical features of chemical compounds using Subspace Clustering.
- 2014 **M.Sci. Research**, *INRIA - LIRIS*, Lyon, France, BEAGLE team, supervised by Christophe Rigotti and Guillaume Beslon.
- Development of *in silico* models to study the evolution of bacteria genome structure.
 - Design of an evolvable Clustering algorithm that adapts to data by changing its genome structure.
- 2013 **Undergraduate Research**, *LBMC, ENS*, Lyon, France, Genetics of Intra-Species Variations team, Supervised by Gael Yvert.
- Design of computer driven statistical analysis of genetic regions involved in selective advantage of yeast populations under breeding.
 - Detection of genetic regions involved in bioethanol manufacturing for Lesaffre company.

- 2012-2013 **Undergraduate Research**, *Faculty of Sciences Universidad Mayor de San Andrés (UMSA)*, La Paz, Bolivia, Supervised by Heriberto Castañeta.
- Genetic Algorithms and Neural Networks methods for Q-SAR of chemical compounds adsorption.
 - Predictive Analysis of RNA secondary structure by Neural Network algorithms.

Awards

- 2018 **Best Paper Award**, *Information Systems*, International ACM Symposium On Applied Computing, Pau - SAC-2018.
- 2015 **Best Paper Award**, *Evolutionary Machine Learning*, International ACM conference on Genetic and Evolutionary Computation Conference, Madrid - GECCO-2015.

Publications

Peer-Review Journals

- [1] Peignier, S., Rigotti, C., and Beslon, G. (2018). Evolutionary Subspace Clustering Using Variable Genome Length. *Computational Intelligence* (submitted).
- [2] Peignier, S., Rigotti, C., and Beslon, G. (2018). Subspace Clustering over Dynamic Data Streams Using Amplification and Genetic Material Uptake. *IEEE Transactions on Evolutionary Computation* (submitted).
- [3] Abernot, J., Beslon, G., Peignier, S. and Rigotti, C. (2017). Evolving Instrument Based on Symbiont-Host Metaphor. *Journal of Creative Music Systems*, 2(1), p.10.
- [4] Peignier, S., and Castañeta, H. (2015). Analysis of subspace clustering of molecules using Chameleoclust, an evolutionary algorithm. *Revista Boliviana de Química*, 32(5), p.10.
- [5] Peignier, S., and Castañeta, H. (2012). Búsqueda de Estructuras Secundarias Óptimas y Subóptimas de una Cadena de ARN Utilizando Inteligencia Artificial. *Revista Boliviana de Química [Prediction of Optimal and Suboptimal Secondary Structure of RNA Molecules Using Artificial Intelligence]*, 29(2), p.10.

Books

- [6] Peignier S., Zapata P. (2017). Análisis del Discurso Socialista Latinoamericano basado en Inteligencia Artificial [Analysis of Latin-American Socialist Speech Based on Artificial Intelligence]. Instituto Internacional de Integración Convenio Andrés Bello. p.245.

Conferences

- [7] Peignier, S., Rigotti, C., Rossi, A., and Beslon, G. (2018) Weight-based search to find clusters around medians in subspaces. *ACM Symposium on Applied Computing Data Mining Track*. p.10.
- [8] Peignier, S., Rigotti, C., and Beslon, G. (2017) EvoMove: Evolutionary-based living musical companion. *European Conference on Artificial Life*. p.8.
- [9] Abernot, J., Beslon, G., Peignier, S. and Rigotti, C. (2016) A commensal architecture for evolving living instruments. In *Proceedings of the Conference on Computer Simulation of Musical Creativity*. p.8.
- [10] Peignier, S., Rigotti, C., and Beslon, G. (2015) Subspace clustering using evolvable genome structure. In *Proceedings of the ACM Genetic and Evolutionary Computation Conference*. p.8. Best Paper in Evolutionary Machine Learning.
- [11] Peignier, S., Rigotti, C., and Beslon, G. (2015) Subspace Clustering for all Seasons. In *EvoEvo Workshop (satellite workshop of ECAL)*. p.3.

Technical Reports

- [12] Peignier, S., (2017) Study of Telemetry Measures for Toro Rosso Formula One Racing Team. Atos Worldline Confidential Technical Report. p.61.
- [13] Abernot, J., Beslon, G., Peignier, S. and Rigotti, C. (2016) Deliverable 5.2 EvoEvo project. FP7 funding, <http://evoevo.eu/>. p.28.
- [14] Abernot, J., Beslon, G., Peignier, S. and Rigotti, C. (2016) Deliverable 5.1 EvoEvo project. FP7 funding, <http://evoevo.eu/>. p.42.

Posters

- 2016 LIRIS, Journée des Thèses du LIRIS (2016): Subspace Clustering Based On Bio-Inspired Evolutionary Algorithm.

Oral Presentations

Invited Talks

- 2017 Invited Speaker, Electrical Engineering Department UMSA, La Paz Bolivia: Minería de datos dinámicos y estáticos mediante algoritmos evolutivos de subspace clustering [Mining static and dynamic data using evolutionary subspace clustering algorithms].
- 2017 Invited Speaker, Linguistics Department UMSA, La Paz Bolivia: Breve introducción al procesamiento de lenguajes naturales y a la minería de datos basada en inteligencia artificial.
- 2016 Invited Speaker, BeyondLab Math-Info event (Industrial transfer event): EvoEvo (Evolution of Evolution).

Contributed Talks

- 2017 LIRIS, DM2L Team: Subspace Clustering Using Bio-Inspired Algorithms.
- 2016 LIRIS, DM2L Team: Subspace Clustering Using Evolvable Genome Structure.

Other Talks

- 2017 Presentation to IT manager board from Toro Rosso F1 (customer).
- 2017 Presentation to commercial manager board from Atos Italy (commercial partner).

Teaching Experience

- 2014–2016 **Modelling of Biological Systems using MATLAB**, INSA, Lyon.
A course for third year students of the Dept. of Bioinformatics and Modelling (6 hours).
- 2014–2016 **Data Bases and SQL**, INSA, Lyon.
A course for third year students of the Dept. of Bioinformatics and Modelling (28 hours).
- 2014–2016 **Algorithmic and Programming on Python**, INSA, Lyon.
A course for third year students of the Dept. of Bioinformatics and Modelling (30 hours).
- 2012–2014 **Academic Tutoring**, *Passerelle Program*, INSA, Lyon.
Academic tutoring in mathematics and programming for first and second year students.

Technical skills

- OS Linux, Microsoft Windows, OSX
- Programming python, C, C++, R, Matlab, Java, \LaTeX , html, CSS
- Databases MYSQL, SQLITE,

Language Skills

French (native), **Spanish** (native), **English** (Fluent, TOEIC 2013)

Portuguese (Very good command, B1 2014), **Italian** (Good command, B1 2013)

Extramural Activities

2018 Writing of data science definitions for the Data Analytics Post website (<https://dataanalyticspost.com/>) from the MVA master at ENS Paris-Saclay.

2014 Development of the "Informatique Sensorielle" project for artistic exploration using Neural Networks. Participation in the 4th RADART meeting.

References

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