

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**.

Additional Training

- 2023 **Introduction to Philosophy I and II**, *Université Catholique de Lyon*, France.
- 2023 **Intensive English Seminar**, *Cambridge University (Erasmus+)*, UK.
- 2021 **Practical Reinforcement Learning**, *Higher School of Economics | Coursera*, Russia.
- 2021 **Mathematics for Machine Learning**, *Imperial College London | Coursera*, UK.
- 2021 **Bayesian Methods for Machine Learning (honorable mention)**, *Higher School of Economics | Coursera*, Russia.
- 2019 **Intensive English Seminar**, *Cambridge University (Erasmus+)*, UK.
- 2017 **Statical Approaches to Automatic Text Mining**, *University Lumière, Lyon 2*, France.
- 2015 **History of Sciences**, *University Claude Bernard, Lyon 1*, France.
- 2015 **Advanced Lecture Course on Computational Systems Biology**, *COMPSYSBIO spring school, Aussois*, France.
- 2009 **Computer Assembly**, *CECOMP, La Paz*, Bolivia.

Work Experience

- 2018-Now **Associate Professor**, *INSA - BF2i*, Lyon, France, Bio-Informatics Department.
- Gene Regulatory Network Inference based on classification algorithms, ensemble learning, and self-expressiveness.
 - Computer Vision and Hyper-spectral Image Processing to detect aphids and powdery mildew
 - Machine Learning oriented modeling of bio-repellent activity of and essential oils
- 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.
- 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.

- 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.
 - QSAR adsorption property.
- 2014–2017 **Ph.D. Research**, *INRIA - LIRIS*, Lyon, France, BEAGLE team, supervised by Christophe Rigotti and Guillaume Beslon.
- 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).

Awards and Grants

- 2025 **Scientific Distinction Medal**, INSA, Lyon.
- 2024 **MITACS (Mathematics of Information Technology and Complex Systems) Global Link Research Award**, *Research visit for Sara Khademiourhe*, Collaboration with Irina Dinu at Alberta University, French embassy in Canada.
- 2023 **Scientific Distinction Medal**, INSA, Lyon.
- 2023 **Scientific Research Highlight**, *Early detection of downy mildew in vines based on machine learning and hyperspectral imaging*, INRAE, SPE Department.
- 2023 **Bonus Qualité Recherche (BQR) [Bonus to Research Quality]**, *NeuroInfo: Neuro-protection against Inflammation in Alzheimer's disease by Omega-3*, A. Lo Van and S. Peignier, 2 years grant, INSA Lyon.
- 2018 **Best Paper Award**, *Information Systems*, International ACM Symposium On Applied Computing.
- 2015 **Best Paper Award**, *Evolutionary Machine Learning*, International ACM conference on Genetic and Evolutionary Computation Conference.

Publications

Peer-Review Journal Articles

- [1] Pensa, R. G., Crombach, A., **Peignier, S.** & Rigotti, C. (2025) Explaining Random Forest and XGBoost with Shallow Decision Trees by Co-clustering Feature Importance. *Machine Learning*
- [2] Lacotte, V., **Peignier, S.**, Rey, M., ...& Livi, S. (2025) Biodegradable and partially biobased active plastic film for sustainable crop protection. *ACS Sustainable Chemistry & Engineering*
- [3] Baa-Puyoulet, P., Gerlin, L., Parisot, N., **Peignier, S.**, ...& Charles, H. (2025) ArtSymbio-Cyc, a metabolic network database collection dedicated to arthropod symbioses: a case study, the tripartite cooperation in *Sipha maydis*. *MSystems*
- [4] Parisot, N., Ribeiro Lopes, M., **Peignier, S.**, ...& Callaerts, P. (2025) Annotation of transcription factors, chromatin-associated factors, and basal transcription machinery in the pea aphid, *Acyrtosiphon pisum*, and development of the ATFdb database, a resource for studies of transcriptional regulation. *Insect Biochemistry and Molecular Biology*
- [5] Balmand, S., Rivard, C., **Peignier, S.**, ...& Zaidman-Rémy, A. (2024) Bacterial tubular networks channel carbohydrates in insect endosymbiosis. *Cell*

- [6] Castañeta Maroni, H., Quispe, A., Yapu Tapia, E., Duchowicz, P. & **Peignier, S.** (2024) Análisis de clustering subspace de pesticidas químicos. *Revista Boliviana de Química*.
- [7] Chabrier, L., Crombach, A., **Peignier, S.** & Rigotti, C. (2024) Effective Pruning for Top-k Feature Search on the Basis of SHAP Values. *IEEE Access*.
- [8] **Peignier, S.**, Sorin, B. , Calevro, F. (2023) Ensemble Learning Based Gene Regulatory Network Inference. *International Journal on Artificial Intelligence Tools*.
- [9] **Peignier, S.**, Lacotte, V., Duport, M. G., ... & da Silva, P. (2023). Detection of Aphids on Hyperspectral Images Using One-Class SVM and Laplacian of Gaussians. *Remote Sensing*.
- [10] Lacotte, V., Dell'Aglio, E., **Peignier, S.**, ... & Da Silva, P. (2023). A comparative study revealed hyperspectral imaging as a potential standardized tool for the analysis of cuticle tanning over insect development. *Heliyon*.
- [11] Schmitt, P., Sorin, B., Frouté, T., ... & **Peignier, S.** (2023). GReNaDIne: A Data-Driven Python Library to Infer Gene Regulatory Networks from Gene Expression Data. *Genes*.
- [12] **Peignier, S.** & Calevro, F. (2023). Gene self-expressive networks as a generalization-aware tool to model gene regulatory networks. *Biomolecules*.
- [13] Lacotte, V., Rey, M., **Peignier, S.**, ... & da Silva, P. (2023). Bioactivity and chemical composition of forty plant essential oils against the pea aphid *Acyrtosiphon pisum* revealed peppermint oil as a promising biorepellent. *Industrial Crops and Products*.
- [14] Dell'Aglio, E., Lacotte, V., **Peignier, S.**, ... & Rebollo, R. (2023). Weevil carbohydrate intake triggers endosymbiont proliferation: A trade-off between host benefit and endosymbiont burden. *Mbio*.
- [15] Huygens, C., Lopes, M. R., Gaget, K., Duport, G., **Peignier, S.**, ... & Callaerts, P. (2022). Evolutionary diversification of insulin-related peptides (IRPs) in aphids and spatiotemporal distribution in *Acyrtosiphon pisum*. *Insect Biochemistry and Molecular Biology*.
- [16] Lacotte, V., NGuyen, T., Sempere, J. D., Novales, V., Dufour, V., Moreau, R., Pham, M., Rabenorosa, K., **Peignier, S.**, ... & Lelevé, A. (2022). Pesticide-Free Robotic Control of Aphids as Crop Pests. *AgriEngineering*.
- [17] Lacotte, V., **Peignier, S.**, Raynal, M., ... & da Silva, P. (2022). Spatial-spectral analysis of hyperspectral images reveals early detection of downy mildew on grapevine leaves. *International Journal of Molecular Sciences* **INRAE SPE Scientific Research Highlight**.
- [18] **Peignier, S.**, Schmitt, P. & Calevro, F., (2021) Data-Driven Gene Regulatory Network Inference Based on Classification Algorithms. *International Journal on Artificial Intelligence Tools*.
- [19] Zapata, P., & **Peignier, S.** (2021). Análisis interdisciplinario de artículos científicos referentes a la pandemia COVID-19. *Revista de Investigación en Lingüística Teórica y Aplicada*
- [20] M. Ribeiro Lopes, N. Parisot, K. Gaget, C. Huygens, **Peignier, S.**, ... & Calevro, F., (2020) Evolutionary Novelty in the Apoptotic Pathway of Aphids. *PNAS*.
- [21] A. Castellini, F. Masillo, M. Bicego, ... & **Peignier, S.**, (2019). Subspace Clustering for Situation Assessment in Aquatic Drones: a Sensitivity Analysis for State-Model Improvement, *Cybernetics and Systems*.
- [22] **Peignier, S.**, & Zapata, P., (2019) Analysis of Fidel Castro Speeches Enhanced by Data Mining, *Digital Humanities Benelux Journal*.
- [23] **Peignier, S.**, Rigotti, C., & Beslon, G. (2018). Evolutionary Subspace Clustering Using Variable Genome Length. *Computational Intelligence*.

- [24] Abernot, J., Beslon, G., **Peignier, S.** & Rigotti, C. (2017). Evolving Instrument Based on Symbiont-Host Metaphor. *Journal of Creative Music Systems*.
- [25] **Peignier, S.**, & Castañeta, H. (2015). Analysis of subspace clustering of molecules using Chameleoclust, an evolutionary algorithm. *Revista Boliviana de Química*.
- [26] **Peignier, S.**, & Castañeta, H. (2012). Prediction of Optimal and Suboptimal Secondary Structure of RNA Molecules Using Artificial Intelligence. *Revista Boliviana de Química*.

Books

- [1] **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.

Peer-Review Conference Articles

- [1] **Peignier, S.**, Lo Van, A., Meunier, Y., Pauliat, E., Zouari, M., Calevro, F. (2025) Decoding Gene Regulation in Alzheimer's Disease with Transfer Learning and Explainable Machine Learning. 23rd International Conference on Computational Methods in Systems Biology, CMSB 2025
- [2] Khademioureh, S., Dinu, I., **Peignier, S.** (2024) GSHAPA: Gene Set Analysis for Single-Cell RNAseq Based on Random Forest and SHAP Values (short paper). ACM Symposium on Applied Computing, SAC 2025
- [3] Pensa, R., Crombach, A., **Peignier, S.**, Rigotti, C. (2024) Combining SHAP-driven Co-clustering and Shallow Decision Trees to Explain XGBoost. *Discovery Science 2024*
- [4] Chabrier, L., Crombach, A., **Peignier, S.**, Rigotti, C. (2024) Re_actShap: détection de rebranchements des réseaux de régulation d'expression génique à l'aide des valeurs SHAP. 25ième conférence sur l'Extraction et Gestion des Connaissances (EGC), session demonstrations
- [5] Chabrier, L., Crombach, A., **Peignier, S.**, Rigotti, C. (2024) Detecting GRN rewiring as changes in marker regulatory associations using single-cell gene expression data. DMBIH (Data Mining in Biomedical Informatics and Healthcare workshop) ICDM 2024
- [6] **Peignier, S.**, & Zapata, P. (2023) Assessing Gene Regulatory Network Inference Algorithms Using Word Embeddings: A Novel Approach for NLP and Systems Biology Integration. *Digital Humanities BeNeLux Conference*
- [7] **Peignier, S.**, Sorin, B., & Calevro, F. (2021) Gene Regulatory Network using Ensembles of Predictors. *IEEE International Conference on Tool with Artificial Intelligence*.
- [8] Atiq, M., **Peignier, S.** & Mougeot, M. (2021) Budget Learning Based on Equivalent Trees and Genetic Algorithms. *IEEE International Conference on Tool with Artificial Intelligence*.
- [9] Debs, N., **Peignier, S.**, Douarre, C., ... & Frindel, C. (2021) Apprendre l'Apprentissage Automatique: un Retour d'Expérience [Teaching Machine Learning: A Feedback]. *Colloque de l'Enseignement des Technologies et des Sciences de l'Information et des Systèmes*.
- [10] **Peignier, S.**, & A. Foncelle. (2020) Analyzing Open Data to Support Democracy: a Study Case Inspecting Electoral Fraud in Bolivian General Elections. *Digital Humanities BeNeLux Conference*.
- [11] Castellini, A., Masillo, F., Bicego, M., ... & **Peignier, S.** (2019). Subspace Clustering for Situation Assessment in Aquatic Drones. *ACM Symposium on Applied Computing*.
- [12] Minvielle, L., Atiq, M. **Peignier, S.**, & Mougeot, M. (2019) Transfer Learning on Decision Tree with Class Imbalance. *IEEE International Conference on Tool with Artificial Intelligence*.

- [13] **Peignier, S.**, Schmitt, P., & Calevro, F. (2019) Data-Driven Gene Regulatory Network Inference Based on Classification Algorithms. IEEE International Conference on Tool with Artificial Intelligence.
- [14] **Peignier, S.**, & Zapata, P. (2018) What can Reveal 1018 Speeches of Fidel Castro? Digital Humanities BeNeLux Conference.
- [15] **Peignier, S.**, Rigotti, C., Rossi, A., & Beslon, G. (2018) Weight-based search to find clusters around medians in subspaces. ACM Symposium on Applied Computing Data Mining Track. **Best Paper in Information Systems.**
- [16] **Peignier, S.**, Rigotti, C., & Beslon, G. (2017) EvoMove: Evolutionary-based living musical companion. European Conference on Artificial Life.
- [17] Abernot, J., Beslon, G., **Peignier, S.** & Rigotti, C. (2016) A commensal architecture for evolving living instruments. In Proceedings of the Conference on Computer Simulation of Musical Creativity.
- [18] **Peignier, S.**, Rigotti, C., & Beslon, G. (2015) Subspace clustering using evolvable genome structure. ACM Genetic and Evolutionary Computation Conference. **Best Paper in Evolutionary Machine Learning.**
- [19] **Peignier, S.**, Rigotti, C., & Beslon, G. (2015) Subspace Clustering for all Seasons. In EvoEvo satellite workshop of the European Conference on Artificial Life.

Technical Reports

- [1] **Peignier, S.**, & Zapata, P. (2020). Frequent Itemsets and Clustering Unravel the Evolution of Evo Morales Discursive Strategies.
- [2] **Peignier, S.**, (2017) Study of Telemetry Measures for Toro Rosso Formula One Racing Team. Atos Worldline Confidential Technical Report
- [3] Abernot, J., Beslon, G., **Peignier, S.** & Rigotti, C. (2016) Deliverable 5.2 EvoEvo project. FP7 funding.
- [4] Abernot, J., Beslon, G., **Peignier, S.** & Rigotti, C. (2016) Deliverable 5.1 EvoEvo project. FP7 funding.

Posters

- [1] Cruché, E., Zouari, M., Ribeiro Lopes, M., Calevro, F., Marteau, C., **Peignier, S.** (2025) GSHAPA: GReNaDIne+: Generalization-Aware Gene Regulatory Networks Inference. 23rd International Conference on Computational Methods in Systems Biology, CMSB 2025
- [2] Khademioureh, S., Dinu, I., **Peignier, S.** (2024) GSHAPA: Gene Set Analysis for Single-Cell RNAseq Based on Random Forest and SHAP Values. ACM Symposium on Applied Computing, SAC 2025
- [3] Huygens, C., Ribeiro Lopes, M., Duport, G., Gaget, K., **Peignier, S.** , ... & Callaerts, P. (2022) Bacteriocytes and the interorgan communication network regulating physiology and metabolism of the pea aphid. Joint Congress of the International Society of Symbiosis and International Conference on Holobionts.
- [4] Baa-Puyoulet, P., Parisot, N., **Peignier, S.**, Calevro, F., & Charles, H. (2022) From genomes to metabolism reconstruction: companion collections of databases to study symbiotic interactions between insects and their bacterial symbionts. Joint Congress of the International Society of Symbiosis and International Conference on Holobionts.

- [5] Balmand, S., Ghanem-Debbache, S., Rivard, C., **Peignier, S.**, , ... & Zaidman-Rémy, A. (2022) Advanced microscopy tools unravel bacterial “pipelines” that enhance carbohydrates uptake by endosymbionts in cereal weevil. Joint Congress of the International Society of Symbiosis and International Conference on Holobionts.
- [6] Montes de Oca, A., Kalogeratos, A., **Peignier, S.** & Mougeot, M. (2021) Implementation and Tuning of Neural Decision Trees. Industrial Data Analytics and Machine Learning - Centre Borelli.
- [7] Minvielle, L., Atiq, M., **Peignier, S.** , Mougeot, M. & Vayatis., N. (2018) Transfer Learning to Detect Falls. CMLA - ENS Paris-Saclay, Transfer Learning Summer School.
- [8] Atiq, M., Minvielle, L., **Peignier, S.**, Mougeot, M. & Vayatis., N. (2018) Transfer Learning on Equivalent Decision Trees. CMLA - ENS Paris-Saclay, Transfer Learning Summer School.
- [9] **Peignier, S.** (2016) Subspace Clustering Based On Bio-Inspired Evolutionary Algorithm. LIRIS, Journée des Thèses du LIRIS.

Oral Presentations

Invited Talks

- [1] **Peignier, S.** (2023) Practical workshop on embedding, clustering and classification of molecular structures in Python. Natural Sciences Faculty at Universidad Mayor de San Andrés, La Paz, Bolivia.
- [2] **Peignier, S.** (2023) Practical workshop on gene regulatory networks inference in Python using the GReNaDIne Library. Natural Sciences Faculty at Universidad Mayor de San Andrés, La Paz, Bolivia.
- [3] Lacotte, V., Rey, M., **Peignier, S.**, ... & da Silva, P. (2023) Bioactivity and chemical composition of forty plant essential oils against the pea aphid *Acyrtosiphon pisum* revealed peppermint oil as a promising biorepellent. INFECTIOTRON seminar MAP, INSA, Lyon, France.
- [4] **Peignier, S.**, Parisot, N., & Calevro, F. (2022) Gene regulatory networks: Use of machine learning methods for the reconstruction and modelling of developmental gene networks in insect bacteriocytes. First DIGIT-BIO Metaprogram seminar, INRAE, Lyon, France.
- [5] Calevro, F., Parisot, N., & **Peignier, S.** (2022) Gene regulatory networks: Inference methods and biological issues in the aphid model. First SPE Plant Health and Environment - numerical meeting, INSA, Lyon, France.
- [6] Lacotte V. & **Peignier, S.** (2021) Development of a Hyperspectral Aphid Database. ANR - GreenShield meeting, CNRS, Lyon, France.
- [7] **Peignier, S.** (2018) The Biological Way of Transfer Learning. Transfer Learning Summer School, CMLA - ENS, Paris-Saclay, France.
- [8] **Peignier, S.** (2017) Mining of dynamic and static data by means of evolutionary subspace clustering algorithms. Electrical Engineering Department UMSA, La Paz, Bolivia
- [9] **Peignier, S.** (2017) Introduction to natural language processing and artificial intelligence-based data mining. Linguistics Department UMSA, La Paz, Bolivia.
- [10] **Peignier, S.** (2017) Subspace Clustering Using Bio-Inspired Algorithms. LIRIS, DM2L, Lyon, France.
- [11] **Peignier, S.** (2016) EvoEvo (Evolution of Evolution). BeyondLab Math-Info event - Industrial transfer event, Lyon, France.

- [12] **Peignier, S.** (2016) Subspace Clustering Using Evolvable Genome Structure. LIRIS, DM2L, Lyon, France.

Contributed Talks

- [1] Ribeiro Lopes, M., Parisot, N., **Peignier, S.**, ... & Calevro, F. (2025) Origin and evolution of Inhibitors of apoptosis (IAPs) in early metazoans, EVOLYON, Lyon, France
- [2] Ribeiro Lopes, M., Parisot, N., Gaget, K., **Peignier, S.**, ... & Calevro, F. (2025) Specific expansion and diversification of Inhibitors of APoptosis (IAPs) support symbiont maintenance and morph-specific regulation in aphids, XII International Symposium on Aphids (ISA), Yongpyong, Korea
- [3] Ribeiro Lopes, M., Parisot, N., Gaget, K., **Peignier, S.**, ... & Calevro, F. (2025) Specific expansion and diversification of Inhibitors of APoptosis (IAPs) support symbiont maintenance and morph-specific regulation in aphids, XII International Symposium on Aphids (ISA), Yongpyong, Korea
- [4] Rigotti, C., Pensa, R. G., **Peignier, S.**, Crombach, A. (2025) Bridging local and global explanations of tree ensemble predictions using co-clustering of SHAP values, NuTS-AI workshop on Artificial Intelligence and Application to Solid Earth, Paris, France
- [5] Gerlin, L., **Peignier, S.** (2024) Utilisation de l'IA et des modèles dynamiques à BF2I, Journée SPE-Num-Nouvelles approches hybrides couplant IA et modèles dynamiques, Montpellier, France.
- [6] Ribeiro Lopes, M., Parisot, N., **Peignier, S.**, ..., & Calevro, F. (2024) Evolutionarily conserved metazoan pathways have evolved new functions and regulate bacteriocytes' dynamics in the context of symbiosis, XXVII International Congress of Entomology, Kyoto, Japan.
- [7] Chabrier, L., Crombach, A., **Peignier, S.**, & Rigotti, C. (2023) Unraveling regulatory associations using explainable AI. Machine learning for genomics workshop (LEGO-JOBIM 2024), Toulouse, France.
- [8] Parisot, N., Ribeiro Lopes, M., **Peignier, S.**, ... & Callaerts, P. (2023) A genome-wide annotation of transcription factors in the pea aphid, *Acyrtosiphon pisum*, and the related database, ATFDdb. French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA), Lyon, France.
- [9] **Peignier, S.**, Cruché, E., Pauliat, E., ... & Calevro, F. (2023) *Acyrtosiphon pisum* tissue-specific gene regulatory network inference. French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA), Lyon, France.
- [10] Lacotte, V., Rey, M., **Peignier, S.**, ... & da Silva, P. (2023) Repellent Anti-insect Net Based on Biopolymer / Plant Essential Oil Blend as an Alternative to Conventional Chemical Pesticides. INRAe SPE Ph.D. students conference, Lyon, France
- [11] Chabrier, L., Crombach, A., **Peignier, S.**, & Rigotti, C. (2022) Semi-supervised learning for tree-based regressors to improve the prediction of the interactions between genes. In Symposium MaDICS, Lyon, France.
- [12] Baa-Puyoulet, P., Parisot, N., **Peignier, S.**, ... & Charles, H. (2022) From genomes to metabolism reconstruction: companion collections of databases to study symbiotic interactions between insects and their bacterial symbionts. French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA), Lyon, France.
- [13] Ribeiro Lopes, M., Parisot, N., **Peignier, S.**, ... & Calevro, F. (2021) The Inhibitor of APoptosis (IAP) gene family in aphids: between expansion and functional diversification. French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA).

- [14] Lacotte V., & **Peignier, S.** (2021). Detection of aphids by hyperspectral imaging under laboratory conditions. French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA).

Other Talks

- [1] **Peignier, S.** (2017) Presentation to IT manager board from Toro Rosso F1 (customer).
[2] **Peignier, S.** (2017) Presentation to commercial manager board from Atos Italy (commercial partner).

Open-Source Software

- [1] **Peignier, S.** (2023) GXN: Generalization-aware self-eXpressive Networks inference, PyPi, <https://pypi.org/project/GXN/>.
[2] **Peignier, S.** (2020) GReNaDIne: Data-Driven Approaches to Infer Gene Regulatory Networks, PyPi, <https://pypi.org/project/GReNaDIne/>.
[3] **Peignier, S.** (2019) DPD: Dendrogram Prototypical Discourse Generator, PyPi, <https://pypi.org/project/DPD/>.
[4] **Peignier, S.** (2017) SubCMedians: Subspace Clustering based on K-medians, PyPi, <https://pypi.org/project/SubCMedians/>
[5] **Peignier, S.** (2017) SubCMedians: Subspace Clustering based on K-medians (Knime-Java package) https://sergiopeignier.github.io/software/SubCMedians_JAR_Archive.zip.
[6] **Peignier, S.** (2016) EvoWave: Wifi Context Analysis based on Subspace Clustering, https://sergiopeignier.github.io/software/EVOWAVE_PACKAGE.zip
[7] **Peignier, S.** (2016) Chameleoclust+ Evolutionary Subspace Clustering, <https://evoevo.liris.cnrs.fr/chameleoclust/>.

Other Academic Activities

Reviewing Activities

- 2024 Scientific Reports (IF = 5.0)
2024 Frontiers in Microbiology Journal (IF = 6.064)
2024 Applied Sciences Journal (IF = 2.838)
2024 ACM/SIGAPP Symposium on Applied Computing (3 articles)
2023 iScience Journal (IF = 6.064)
2023 Frontiers in Microbiology Journal (IF = 6.064)
2023 Big Data and Cognitive Computing Journal (IF = 3.9)
2023 Entropy Journal (IF = 2.738)
2023 Applied Sciences Journal (IF = 2.838)
2023 Agriculture Journal (IF = 3.408)
2023 ACM/SIGAPP Symposium on Applied Computing (3 articles)
2022 Mathematics Journal (IF = 2.84)
2022 Electronics Journal (IF = 2.69)
2022 Applied Sciences Journal (IF = 2.838)
2022 Information Sciences Journal (IF = 6.795)
2022 Journal of Artificial Intelligence Research (IF = 2.77)

- 2022 F1000 Research Taylor & Francis Journal (IF = 2.3)
- 2022 ACM/SIGAPP Symposium on Applied Computing
- 2021 Reports Journal (IF = 4.379)
- 2021 Information Sciences Journal - Elsevier (IF = 5.524)
- 2019 Digital Humanities BeNeLux Conference (3 articles).

Scientific and Editorial Board

- 2024 Program Committee for the 40th ACM/SIGAPP Symposium On Applied Computing, (Track Machine Learning and Its Application), Catania, Italy
- 2024 Scientific Board member of "inLux Biotech" start-up, Lyon, France.
- 2023 Editorial Board member of the "Editorial Salud, Ciencia y Tecnología" [Editorial Health, Science and Technology] journal - "Data and Metadata" issue, Buenos Aires, Argentina.

Conference/Workshop Organisation

- 2023 Member of the organisation of the 13th French Network for the Adaptive Biology of Aphids and Associated Organisms (BAPOA) network meeting, INSA, Lyon, France.
- 2022 Moderator of the "Artificial Intelligence in Life Sciences" workshop: Can we (and how) detect cis-regulatory DNA motifs in gene transcription?, First DIGIT-BIO Metaprogram seminar, Lyon, France.

Administrative activities

- 2024-2025 Member of the pedagogical BioSciences department workshops to reorganize the INSA-Biosciences curriculum, INSA, Lyon, France
- 2023-2024 Year Head, Master 1, Department of Biosciences, Section of Bioinformatics and Modeling, INSA, Lyon, France
- 2021-Now Member of the "Humanities Personal Project" validation team, INSA, Lyon, France
- 2020-Now Member of the "sustainable development and social responsibility" working group, Department of BioSciences, INSA, Lyon, France
- 2020-2021 Director of Studies, Bio-Informatics and Modeling, Department of BioSciences, INSA, Lyon, France
- 2018 Member of the working group "ethical and professional aspects" for the HRS4R (Human Resources Strategy for Researchers) accreditation project, INSA, Lyon, France

Jury

- 2025 **Joanna Pautonnier**, *Predictive properties of models/algorithms based on their contexts of use (contextualized predictions).*, Ph.D. Monitoring Committee, LBBE, Université Lyon I, France.
- 2023 **Catalina Gonzales Gomez**, *Development of new statistical models for estimating connectivity between transcriptomic signatures.*, Ph.D. Monitoring Committee, Signia Therapeutics, VirPath, Université Lyon I, France.
- 2022 **Mounir Atiq**, *Elderly monitoring using decision trees under domain shifts and computational resource constraints*, Ph.D. jury, ENS, Paris-Saclay, France.

Mentoring

Ph.D. Mentoring

- 2025–Now **Katterine Taïpe Huamani**, *AI-assisted design of biodegradable and/or bio-based biopolymers for sustainable protection of agricultural crops*, Ph.D. supervision, INSA, Lyon, France.
- 2024–Now **Erwan Cruché**, *Inference and exploration of gene expression regulatory networks in an insect crop pest*, Ph.D. supervision, INSA, Lyon, France.
- 2024–2025 **Sara Khademiourhe**, *Advancing Gene Expression Analysis: Assessing and Enhancing the Linear Combination Test Through Integration with Machine Learning Tools*, Ph.D. supervision, Alberta University Canada - INSA Lyon France.
- 2021–2025 **Lisa Chabrier**, *Delta-Regulons Inference*, Ph.D. supervision, INSA, Lyon, France.

Master Mentoring

- 2025 **Leonardo Chiaravalloti**, *Machine Learning for Integrated Pest Management*, M2 internship, INSA, Lyon, France.
- 2024 **Matis Zouari**, *Inference of Gene Regulatory Networks based on Interpretable Machine Learning Techniques*, M1 internship, INSA, Lyon, France.
- 2024 **Yann Meunier**, *Gene Regulatory Networks in Neuro-Inflammation in Alzheimer's Disease*, M1 internship, INSA, Lyon, France.
- 2023 **Erwan Cruché**, *Rashomon effect in the inference of Gene Regulatory Networks*, M1 internship, INSA, Lyon, France.
- 2023 **Elea Pauliat**, *Gene Regulatory Networks in Neuro-Inflammation in Alzheimer's Disease, in collaboration with M. De Pittà and A. Lo Van*, M1 internship, INSA, Lyon, France.
- 2022 **Timothée Frouté**, *Inference of gene expression regulation networks in an insect crop pest, Co-advisor with N. Parisot*, M2 internship, Université Lyon I, France.
- 2021 **Lisa Chabrier**, *Preprocessing Techniques for Arboreto Gene Regulatory Network Inference, Co-advisor with C. Rigotti and A. Crombach*, M2, Sorbonne-Paris, France.
- 2020 **Baptiste Sorin**, *Gene Regulatory Network based on Ensemble Learning*, M1 internship, INSA, Lyon, France.
- 2020 **Mélanie Sawaryn**, *Text Mining and Automated Graph-Based Summaries*, M1 internship, INSA, Lyon, France.
- 2019 **Pauline Schmitt**, *Gene Regulatory Network based on Classification*, M1 internship, INSA, Lyon, France.
- 2019 **Anthea Mérida**, *Ensemble learning based on Sub-Forests*, M2 internship, Paris-Saclay University, France.

Teaching

5th Year BioSciences (Bioinformatics and Modeling) (Master 2)

- 2018–Now **Projects Supervision**, INSA, Lyon.

4th Year BioSciences (Bioinformatics and Modeling) (Master 1)

- 2018–Now **Stochastic Processes**, INSA, Lyon.
- 2018–Now **Gene Regulatory Network Inference**, INSA, Lyon.
- 2020–Now **String-Searching Algorithms**, INSA, Lyon.
- 2018–Now **Artificial Intelligence**, INSA, Lyon.

- 2018–Now **Software Development Project**, INSA, Lyon.
- 2018–2020 **Theoretical Computer Sciences and Graph Theory**, INSA, Lyon.
- 2018–2020 **Software Deployment (Docker)**, INSA, Lyon.
[3th Year BioSciences \(Bioinformatics and Modeling\) Dept. \(License 3\)](#)
- 2018–Now **Data Bases and SQL**, INSA, Lyon.
- 2020–2023 **Introduction to Mathematics (Differential Equations)**, INSA, Lyon.
- 2020–2025 **Introduction to Computer Sciences (Data-Mining)**, INSA, Lyon.
- 2018–2024 **Linear Algebra and Matrix Analysis**, INSA, Lyon.
- 2014–2016 **Modeling of Biological Systems using MATLAB**, INSA, Lyon.
- 2014–2016 **Algorithmic and Programming on Python**, INSA, Lyon.
[2th Year Initial Training in Engineering Professions - INSA Lyon \(License 2\)](#)
- 2023–Now **Bioengineering, Bio-based Polymer Materials, and Environment**, INSA, Lyon.
[Academic tutoring in mathematics and programming \(License 1 and 2\)](#)
- 2012–2014 **Academic Tutoring**, *Passerelle Program*, INSA, Lyon.

Technical skills

- OS Linux, Microsoft Windows, OSX
- Programming Python (scikit-learn, scikit-image, keras, tensorflow, networkx, pandas, numpy, seaborn), C, C++, R, Matlab, Java, \LaTeX , html, CSS
- Databases MYSQL, SQLITE, NEO4J

Language Skills

- French** (native), **Spanish** (native), **English** (Fluent)
- Portuguese** (Very good command, B1 2014), **Italian** (Good command, B1 2013)

Extramural Activities

- 2018 Contribution to 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.