Sébastien **Gradit**

COMPUTATIONAL BIOLOGIST · DATA SCIENTIST

Paris, France

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Highly accomplished PhD Computational Biologist with over five years of experience, specializing in **bridging AI/ML solutions** and **Bioinformatics** to transform complex **multi-omics data** into actionable insights for **R&D**. My expertise includes advanced computational methods and data-driven approaches to accelerate **tool deployment and integration**, with a strong focus on **reproducibility** and **multidisciplinary collaboration**.

Experience

Pasteur Institute
Paris, France

PHD CANDIDATE — *Oct. 2021 – Dec. 2024*

- Led comprehensive PhD research focused on deciphering hidden chromatin contacts from repeated genomic elements via advanced statistical profiling.
- Developed Hicberg, a novel computational tool for reconstructing missing chromatin contacts in repeated regions, extensible to pair-ended omics data, leading to new insights into the spatial organization of genomes.
- Applied **Hicberg** to investigate *Saccharomyces cerevisiae* rDNA behavior and chromatin dynamics under various stress conditions (e.g., heat, oxidative) and kinetics.
- Leveraged **Deep Learning** to predict 2-micron plasmid interactions with the yeast genome based on nucleosome occupancy data.

Siemens HealthCare - LIPADE
Paris, France

BIOMEDICAL ENGINEER — *Feb. 2020 - Sept. 2020*

- Spearheaded the development of **Machine Learning-driven automatic segmentation tools** for bone lesion identification in (x)SPECT volumes, significantly enhancing diagnostic workflow efficiency and providing radiologists with data-driven insights for more confident decision-making in oncology.
- Engineered an end-to-end pipeline for automated extraction of radiomic features from xSPECT volumes, accelerating objective region-of-interest classification and segmentation to deliver critical, actionable data for diagnostic support.

Danone Nutricia Research
Saclay, France

BIOMEDICAL ENGINEER — *Feb. 2019 - Sept. 2019*

- Pioneered the implementation and benchmarking of Area Under the Curve (AUC) computation techniques for bioequivalence assays, optimizing data reliability.
- Engineered an **interactive user interface** for bioequivalence assay analysis, enabling real-time computation, visualization, and comparative insights.
- Integrated Machine Learning models to refine clinical trial plans, directly supporting data-driven decision-making.

CABOMA - Université de Montréal
Montréal, Canada

BIOMEDICAL ENGINEER — *May. 2018 - Aug. 2018*

- Design and optimization of biomechanical models for foot orthotics design tailoring based on patient morphology.

Education

PhD in Bioinformatics
Paris, France

PASTEUR INSTITUTE - SORBONNE UNIVERSITY — *Oct. 2021 - Dec. 2024*

Spatial Regulation of Genomes lab | Genomes and Genetics department

M.Sc. in Image Processing and Artificial Intelligence | With honors
Paris, France

TÉLÉCOM PARIS - SORBONNE UNIVERSITY — *Sept. 2019 - Sept. 2020*

Advanced Image Processing and Artificial Intelligence applied to biomedical imaging

M.Sc. in Biomedical Engineering (Engineer Diploma.) | With highest honors
Créteil - Noisy le Grand, France

INSITUT SUPÉRIEUR DES BIOSCIENCES (ISBS) - ESIEE — *Sept. 2016 - Sept. 2019*

Bioinformatics, Drug Development, Medical Image Processing, Machine Learning, Signal Processing, Biostatistics, Biomechanics, Biomaterials, Regulatory Affairs, Quality Assurance, Project Management.

Skills

Core Programming **Python** [*advanced*], **Bash** [*advanced*], **C++** [*Intermediate*], **R** [*Intermediate*], **High Performance Computing** [*Slurm*], **Cloud** [*AWS*], **Versioning** [*Git, GitHub*]

Data Science **Machine Learning** [*Keras*, *TensorFlow*, *PyTorch*, *SciKit-Learn*], **SQL** [*Intermediate*], **Interactive Dashboards** [*Streamlit, Shiny*]

Data Management **Continuous Integration/Continuous Development** [*GitHub Actions, Snakemake, Makefile*], **Containerization** [*Docker, Singularity*]

Bioinformatics **Package Development** [*PyPI, Conda*], **Multi-Omics Integration**, **Automation of Mapping and Downstream Analyses (NGS)**, **High-Throughput Omics Data Analysis** [*RNA-Seq, ChIP-Seq, Hi-C, Single-cell Omics*]

Languages **French** [*Native*], **English** [*Fluent: TOEIC 955/990*]

Soft Skills

Soft Skills

- **Analytical Thinking** & **Complex Problem-Solving**
- **Adaptability**, **Agility** & **Continuous Learning**
- **Creative Thinking** & **Innovation**
- **Effective Communication** & **Multidisciplinary Collaboration**

Honors & Awards

2025 **1st Place**, Read Write Grow - Biocatalyst Foundation *Europe, Remote*
Classification of protein sequence safety through LLM and AI for Synthetic Biology designs

2024 **INCEPTION Program Grant**, Fellowship *Paris, France*
Awarded a highly competitive grant covering the final three months of the PhD program, demonstrating recognition of research merit and strategic value to the field.

2022 **1st Place**, Digital 4 Genomics Hackathon *Genopole, Evry*

Certificates

2023 **TensorFlow Advanced Specialization**, DeepLearning.AI

2023 **Deep Learning Specialization**, DeepLearning.AI

2023 **Machine Learning Specialization**, Stanford - DeepLearning.AI

Publications

Hicberg: Reconstruction of Contact Signals from Repeated Elements **biorXiv**, 2025
Gradit S., *Ortion S.*, *Larrous P.*, *Delouis M.*, *Koszul R.*, *Cournac A.*

Selected scientific communications

2024 **JOBIM 2024, Toulouse**, Poster | Prediction of Omics Signal from Repeated Elements

2024 **JeBiF@JOBIM 2024, Toulouse**, Workshop | Good Practices in Bioinformatics

2023 **International Congress for Transposable Elements, St-Malo**, Poster | Prediction of Omics Signal from Repeated Elements

2023 **31st Intelligence Systems for Molecular Biology (ISMB), Lyon**, Poster and Talk | Statistical Inference of Repeated Elements Contacts in Hi-C maps

Extracurricular Activity

Jeunes BioInformaticiens de France (JeBiF) *France*

President *2022 - 2024*

- Led strategic initiatives to **structure and energize** France's emerging bioinformatics talent.
- Fostered **national and international collaborations** within the bioinformatics community.
- **Promoted and popularized** bioinformatics to public, private, and international stakeholders.
- Organized **community-building events** and disseminated information on bioinformatics training.