Gustavo **MAGAÑA LOPEZ**

COMPUTATIONAL BIOLOGIST

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Education

M2 AMI2B (Computational Biology) — *France*

UNIVERSITÉ PARIS-SACLAY — *2021-present*

- Web development, database optimisation, theoretical computer science, graph theory, biological systems dynamics, machine learning
- Population genomics, comparative genomics, NGS, image analysis

M1 BIBS (Bioinformatics and Biostatistics) — *France*

UNIVERSITÉ PARIS-SACLAY — *2020-2021*

- Data mining, multivariate statistics, maximum likelihood estimation, database conception
- Sequence analysis, structural bioinformatics, biological systems and networks modeling
- Graduated with honours

Exchange year, L3 Ingénieur Civil (Spécialisation Informatique et Gestion) — *Belgium*

FACULTÉ POLYTECHNIQUE UMONS — *2018-2019*

- Linear and non-linear optimisation, multivariate statistics, mutlicriteria decision aid
- Software development project : Support Vector Machines for Glycaemia Prediction

BSc Biomedical Engineering — *Mexico*

UNIVERSIDAD DE GUANAJUATO — *2015-2020*

- Interdisciplinary, research-oriented programme with strong foundation in physics and mathematics
- Human anatomy and physiology, biophysics, biochemistry, cellular biology, signal and image processing, circuit analysis, and programming
- Graduated with honours

Experience

M2 Internship — *Boolean Models*

LaBRI UNIVERSITÉ BORDEAUX — *2022 (ongoing)*

- Under the supervision of Loïc PAULEVÉ
- Generation of synthetic sequencing data and executable models of cellular differentiation
- As part of the French ANR project BNeDiction: https://anr.fr/Project-ANR-20-CE45-0001

M1 Internship — *scRNA-seq Data Processing Pipeline*

LISN UNIVERSITÉ PARIS-SACLAY — *2021*

- Under the supervision of Loïc PAULEVÉ, Christine FROIDEVEAUX, Stéphanie CHEVALIER, and Andrei ZINOVYEV
- Development of a Python package to perform the binarisation of RNA-seq data
- As part of the French ANR project BNeDiction: https://anr.fr/Project-ANR-20-CE45-0001

L4 Internship — *CNNs for Semantic Segmentation*

UNIVERSIDAD DE GUANAJUATO — *2019*

- Under the supervision of Edwin BEDOLLA
- Implemented a journaling system to ensure reproducibility of Convolutional Neural Networks training
- Implemented the MultiResUNet CNN architecture using Python package keras

Research Assistant — *Statistical Mechanics Simulations*

UNIVERSIDAD DE GUANAJUATO — *2018*

- Under the supervision of Marco HEINEN and Francisco SASTRE
- Ideal gas simulations for dimensions [1, 3], implemented in C
- Datastructure optimisation: reducing memory footprint of binary trees

Knowledge and Skills

PROGRAMMING LANGUAGES

- Profficient in: Python, R, C
- Familiar with: Julia, C++, Java

PROGRAMMING PARADIGMS

- Imperative, Object-Oriented, Functional, Test-Driven

Development Tools

- Version control and CI: git, github, github actions
- Operating systems and shell scripting: UNIX/Linux, Bash, Fish, ssh
- Virtual Environments for Python and R: poetry, anaconda, renv
- R-Python integration: rpy2 and reticulate packages

Databases

- PostgreSQL, MySQL

Typesetting

- LaTeX, MS Office Word, Rmarkdown

Languages

- Mother tongue: Spanish
- C2: French, English
- B2+: Italian
- A1: Hebrew, Dutch

Personal

- Great communication skills acquired through my teaching experience
- Proactive, independent, and capable of self-teaching
- Driven by evergrowing curiosity

Publications and Software

TidyCSV
PyPI

Minimalistic, test-driven, pure-python package
2021

- Personal project aiming to solve a problem I had often encountered: poorly formatted CSV files
- https://pypi.org/project/tidycsv/

scBoolSeq
Bioinformatics

scRNA-Seq data binarisation and synthetic generation from Boolean dynamics
2022

- Pending submission as an application note in gene expression.
- https://pypi.org/project/scBoolSeq/

Teaching

French (B1 Level)
Mexico

Alianza Francesa de León
2019

Integral Calculus, last year of high school
Mexico

Instituto Lux
2018

Euclidean Geometry, first year of high school
Mexico

Instituto Lux
2017

Personal interests and hobbies

- I am an amateur musician. I can play guitar, base, ukulele, and drums
- I am interested in philosophy and linguistics
- I have participated in oratory and Model United Nations debates
- My favourite sport is cycling