



Dr. Alexis Gomel

I am a data-driven physicist with over six years of experience in applying advanced data analysis, numerical modeling, and data science techniques to solve complex problems in the academia. I've come to realize that academic path is not what I want for my professional life, and i'm excited to start a new career path in the industry.

My curiosity driven personality has provided me with much experience learning new things which has allowed me to work in diverse topics and quickly integrate into highly multicultural teams, collaborating effectively with colleagues and external partners. I also enjoy getting involved in my communities, be it in the workplace, by volunteering in science divulgation projects, or in my local dance society (vereine) where I contribute as substitute teacher, Dj, and organizer.

Personal & contact

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Work experience

Mar 24 - Today **Professional break & personal development,** **Munich, Germany**

- Upskilled through online courses in data science, and machine learning. Attended data & Ai networking events.
- Developed personal projects which can be found on my website and participated in Kaggle competitions.
- Studying German (A2) to enhance communication skills for professional and personal integration.

Apr 23 - Feb 24 **PDRA Researcher (short contract),** **Reading, United Kingdom,**
Mathematics of Planet Earth, University of Reading

- Developed and analyzed my own research on climate tipping point using stochastic strongly-forced systems, and early warning signals of abrupt transitions from data properties using statistical techniques to evaluate possible real world applications and policies.
- Developed scripts and algorithms in Python and Matlab for numerical simulation, data analysis and visualization. Developed tools to simulate climate scenarios and assess their impact.
- Worked with interdisciplinary teams to integrate their insights into my climate models as part of the TIPES (Tipping Points in the Earth System) EU horizon 2020 project.
- Relocated internationally for a short-term contract to collaborate with a team of interest.
- **Skills:** Data science & visualization, data analysis, numerical modeling, nonlinear systems, Python.

May 18 - Feb 23 **Physics PhD Researcher,** **Geneva, Switzerland,**
Nonlinearity and Climate Group, University of Geneva

- Developed a new multi-scale models for gravity waves, enhancing simulations accuracy and understanding of wave phenomena for complex bathymetry scenarios and leading to a high-impact publication.
- Developed a theoretical model for extreme waves caused by bathymetry changes, with implications for coral reefs and coastal areas, using analogies from optical systems.
- Realized and analyzed an experimental validation of the theoretical framework, thanks to a collaboration with the University of Sydney, where I conducted experimental validation in real time using advanced data science techniques and custom KPI, leading to 2 publications in high impact journals.
- Conducted high-energy laser experiments and developed a real-time interface for data analysis to optimize lab efficiency. Results led to a peer-reviewed publication on the dynamical features of laser filamentation transition.
- Collaborated with international teams in Sydney to validate theoretical results, leading to long-term research partnerships.
- Presented research at 3 international conferences, authored 4 peer-reviewed papers and wrote and performed a public defense of my PhD thesis against a panel of international experts.
- **Skills:** Data science, data analysis, image preprocessing, theoretical modeling, numerical simulations, scientific communication, collaboration, Python & Matlab.

- May 18 - Dec 22 **A1 Assistant,** **Geneva, Switzerland,**
University of Geneva
- Designed and delivered coursework in nonlinear dynamics, and laboratory courses.
 - Improved attendance and performance by enhancing coursework experiences, with Python and MATLAB based interactive materials, animations and visualizations.
 - Taught in both English and French, coordinating with faculty to design exams and optimize course content.
 - **Skills:** Mentoring and presentation. Coordination with colleagues and interactive coursework design.
- Feb 16 - Apr 16 **Undergraduate Teaching assistant,** **Buenos Aires, Argentina,**
University of Buenos Aires
- **Skills:** Communication, mentoring, crafting educational materials.
- July 15 - Feb 16 **Math substitute teacher,** **Buenos Aires, Argentina,**
Boston & River Plate High Schools
- **Skills:** Communication, mentoring, crafting educational materials.

Education

- 05/18 - 02/23 **PhD in Physical sciences,** *University of Geneva, Switzerland,* G.P.A: 10/10
- 03/08 - 04/17 **M.S Physics,** *Universidad de Buenos Aires, Argentina,* G.P.A: 8.89/10

Hard skills

- Expert ●●● Python | Matlab | Git
- Intermediate ●●○ SQL | Latex
- Basic ●○○ Tableau (learning) | Cassandra | Spark | HTML | Poetry
- Data science** Machine learning, data analysis, visualization and storytelling, data cleaning and pre-processing.
- Mathematics** Regressions, spectral analysis, nonlinear differential equations, linear algebra, time series analysis.
- Statistics** Ensemble statistics, uncertainty estimation, PCA, k-means, mutual information.
- Libraries** Numpy, Pandas, PySpark, Sk-learn, Scipy, Matplotlib, Poetry, Keras.

Soft skills

- Communication** Strong presentation skills in English and Spanish for expert and non-technical audiences.
- Collaboration** Collaboration in interdisciplinary and multicultural teams.
- Mentoring** Teaching more than 200 students in schools and universities.
- Management** Managing research projects and mentoring master students.
- Adaptability** Ability to quickly learn new topics.
- Research** Ability do my own research and project documentation.
- Language** Spanish (native), English (proficient), French (intermediate), German (A2 beginner).

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