

Fabrice Lécuyer

PhD Student in Complex Networks at LIP6 Sorbonne

Research

- 2020–2023 **Sorting Nodes**, *Complex Networks Team in LIP6 Sorbonne + CRI Network Ties Team*, Paris.
PhD project supervised by Lionel Tabourier, Maximilien Danisch, Marc Santolini.
As we have access to arbitrarily big networks collected from various fields (biology, social ties, trade, web), graph algorithms should be linear if we want them to scale. One promising idea is to sort nodes according to specific graph properties (degree, centrality, degeneracy, etc) to improve experimental run-time and theoretical bounds. Implement and compare existing orders. Define new orders leveraging properties of real graphs. Reduce complexity of algorithms for networks with such properties.
- 2020 **Dynamic Community Detection**, *Data Science Team, LIRIS*, Lyon.
six months Detect and analyse communities in fine-grained dynamical networks. Transpose static models to link streams. Confront them to various quality functions of the literature. Design scalable methods, test them on real and synthetic datasets.
- 2017 **Model of the Hospital Network**, *Barabási lab, Northeastern*, Boston.
three months Model health trajectories based on millions of hospital admissions. Manipulate different models of mobility such as gravity or radiation, and compare them to census data. Study the correlation between social groups and specific diseases.
- 2016–2017 **Dicotomix Communication Software**, Lyon, project with ten Master students.
one year Design a communication system for people with paralysis. Program electroencephalography headsets, define fast means of expression with linguists. Involve many health professionals and participate in two hackathons.
- 2016 **Biological Regulatory Networks**, *Institute in Cybernetic*, Nantes.
two months Analyse gene interaction networks and theoretical inference graphs. Parse real data about protein activation and inhibition, simulate the behaviour of multi-genes systems.
- 2014–2015 **Web Network Simulation**, Paris, project during *Classes préparatoires*.
one year Use graph theory to model a computer network and its resilience under perturbation. Perform several oral presentations.

Education

- 2015–2020 **Master in Computer Science**, *Ecole Normale Supérieure de Lyon*, France.
• Major in theoretical computer sciences: graph theory, algorithmic, probability, complexity, algebra...
• Minor in complex systems: network theory, epidemiology, thermodynamics, data processing...
- 2018–2019 **Gap year for travels and personal projects**.
Months-long backpacking experiences with minimum planning and equipment, to get a sight of different landscapes, political systems and languages, to meet people with different priorities and customs.
- 2017–2018 **Erasmus: Bachelor in Physics**, *Ludwig Maximilian Universität of Munich*, Germany.
Major: theoretical and applied physics. Minor: German language.
- 2013–2015 **Classes préparatoires in Science**, *Lycée Saint-Louis*, Paris, France.
Intensive preparation in maths, physics and computer sciences for competitive admission into leading schools of science and engineering. Admission in *ENS Lyon*, top-ranking research-oriented school.
- 2013 **Baccalauréat of Science**, *Lycée Corot*, Paris area, France.
French high-school certificate with highest honour. Award in the Olympiad of mathematics.

Work Experience

- 2020–Now **Teaching assistant**, *Sorbonne Université*, Paris.
Python101: learn mathematical programming using the stricter language MrPython.
- 2019–2020 **Oral examiner in theoretical physics**, *Prépa CPE Chartreux*, Lyon.

2017–2018 **Frontend Software Developer**, *Carsync Fleet Management, Vispiron GmbH*, Munich.

Develop a new Angular2 product interface with a team of full-time developers.

2009–2013 **Web developer freelance**, *online game Terre de Feu*.

Design and develop backend and frontend from scratch. Manage a community of hundreds of players.

Other

Computer **c++**, **python**, **js**, **angular**, **sql**, **html5**, **css3**, **git**, **c**, **L^AT_EX**, **php**, **caml**, **linux**, **excel**...

Languages **French** (native), **English** (fluent C_2), **German** (advanced C_1), **Spanish** (intermediate B_2).

Music Piano teacher; classical singer (Munich Unichor, Paris Music Academy); violist, accordionist.

Interests Sustainability, international relations, linguistics...