Afonso Li

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EDUCATION

PhD in Mathematics, Université de Bordeaux (2024-2027)
Subject: On the hardness of NTRU problem

MSc in Mathematics, Sorbonne Université (Former Université Pierre et Marie Curie) (2021-2024)
- Courses: Commutative Algebra, Differential geometry, Group representation, Galois Theory, Algebraic topology, Number theory, Introduction to Riemann surfaces, Algebraic cryptography, Homological algebra, arithmetic of elliptic curves, scheme theory, cohomology of coherent sheaves, Complexity theory.

Double Bachelor's degree in Mathematics and Computer Science, Université de Paris (2018-2021)
- Overall grade of 13.08/20 in Mathematics and 13.076/20 in Computer Science, mention Assez Bien.
- Relevant coursework completed by June 2021:

<u>Mathematics courses</u>: Elementary Algebra and Analysis, Mathematical Reasoning, Algebra 3, Calculus 3, Algebra and Calculus 4, Probability 4, Algebra I, Calculus 5, Probability 5, Integration and Fourier series, Algebra II, Mathematical logic, Optimisation.
<u>Computer science courses</u>: Introduction to programming 1, Principles of Computer Operation, Introduction to operating systems, IT concepts, Introduction to programming 2, Object-oriented programming, Automatons and lexical analysis, Programming project in Java, Elements of algorithmic, C Language, Operating system, Graph algorithms, Graph theory, Functional programming, Network programming, Relational database management system PostgreSQL.
<u>Other Relevant Courses</u>: Intensive language course (English), Mathematics and Computer Science project.

French High School diploma, scientific option, Lycée Français de Porto (2013-2018)
- Overall grade of 15.65/20, mention Bien.
- Relevant modules: Maths 17/20, Chemistry and Physics 15/20, Biology 16/20, English 20/20

PROJECTS AND RESEARCH EXPERIENCE

Master's thesis under Alice Pellet-Mary
On the hardness of unique-SVP modules of rank 2
Examining potential attacks on the NTRU problem using lattice reduction algorithms such as BKZ and techniques involving subfields in a number field.

Mathematics and Computer Science project: *Eden Growth Model*, Université de Paris (2021)
- Explanation and visualisation of the model and its evolution rules in dimensions 1 and 2 using Python and Java.
- Visualised the model's behaviour when time was extended with a Java program.
- Comparison between the model and a certain family tree in order to determine the convergence of the model to a certain limiting shape.
- Understood the behaviour of the family tree when a particular probability is given as a parameter and deduced the stochastic dominance of our model by the family tree.
- Underlay the complexity of used algorithms.
- Used Tensorflow to create a program that analyses pictures of the model at a precise time and deduced the initial parameter given to the model.

Network programming project: *Netradio*, Université de Paris (2021)

- Understood how machines communicate using different methods like User Datagram Protocol (UDP) and Transmission Control Protocol (TCP).
- Created various entities (Server & Client) using Java and C language.

Mathematics project:

How the creation of the GPS allowed a much more precise localisation, **Université de Paris (2019)**

- Understood and explained the numerous mathematics notions behind GPS.
- Delivered an experiment and a paper using LaTex to professors.

WORK EXPERIENCE AND POSITION OF RESPONSIBILITY

Web Design for E-Commerce, Tellus Group (Oct 2020-Apr 2021)

- Responsible for establishing the purchase page for the company.
- The company made about 150 000 euros of gross sales out of E-Commerce since October 2020.
- Created a webpage that respects the law of general data protection regulation (GDPR).
- Worked effectively and remotely from home to deliver a precise project to the firm.

Coordinator at the Math Society, Université de Paris (Sept 2019-Feb 2020)

- Helped new exchange students from abroad to settle into the university.
- Organised numerous events for the department of mathematics such as the international week for foreign students.

IT SKILLS

Java	Language interpreter, games, Network	**OCaml**	L-system construction
C language	Operating System, Network	**Python**	Algorithmic, Machine Learning, Data Analysis
Github, GitLab	Project management and agile methodology	**Databases**	MySQL, PostgreSQL
HTML 5, PHP, CSS	Websites	**LaTex**	Research dissertation

LANGUAGE

French	Fluent	**Portuguese**	Fluent
Mandarin	Fluent	**English**	Fluent

INTERESTS

Tennis	Compete occasionally, ranked 30/1 in France	**Strategy games**	Mahjong, Rummikub and Chinese Chess
Cooking	Japanese food with twists	**Anime series**	

REFEREES

Prof Olivier BRUNAT, IMJ-PRG, Paris Diderot, olivier.brunat@imj-prg.fr

Prof Valia MITSOU, IRIF, Paris Diderot, vmitsou@irif.fr

Prof Cyrille LUCAS, LPSM, Paris Diderot, lucas@lpsm.paris

Prof Paul ROZIÈRE, IRIF, Paris Diderot, roziere@irif.fr

Prof Laurent CHARLES, IMJ-PRG, Université Pierre-et-Marie-Curie, laurent.charles@imj-prg.fr