Bertrand TEGUIA TABUGUIA | Mathematician and Computer Scientist, Ph.D.

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Latest update: July 2021

OTHER PERSONAL DATA

Date of Birth March 11, 1993
Family Status Single, without children
Country and Place of Birth Cameroon, Yaounde

EDUCATION

University of Kassel, Germany **Kassel**
Ph.D. in Mathematics, Computer Algebra *August 2018 – May 2020*
Power Series Representations of Hypergeometric Type and Non-Holonomic Functions in Computer Algebra, grade: distinction.
The thesis can be downloaded from the link `https://kobra.uni-kassel.de/handle/123456789/11598`.

AIMS-Cameroon **Limbe**
Master in Mathematical Sciences *August 2017 – July 2018*
Study pure and applied mathematics at AIMS (African Institute for Mathematical Sciences), Cameroon center.
Research essay in Computer Algebra: **Automatic Computation of Laurent-Puiseux Series of Hypergeometric Type**, grade: distinction.
AIMS Taught Master, final grade: distinction

ENSP Yaounde-Cameroon **Yaounde**
Engineering in Mathematics and Computer Science *September 2011 – July 2016*
Ecole Nationale Supérieure Polytechnique (ENSP), Departments: Mathematics and Physical Sciences, and Computer Engineering.
Master Thesis: **Classification Non Supervisée et Suivi des Processus de Dynamique Forestière**, grade: excellent (distinction).
Master in Computer Engineering, final grade: Good

Lycée de Mballa II **Yaounde**
Baccalauréat C *September 2004 – July 2011*
Secondary and High School.

EXPERIENCES

University of Kassel, Germany **Kassel**
Mathematical software developer, Research Associate *February – August 2021*
Part-time position focused on some programming duties in Maxima and Maple.

Maplesoft **(virtual) Waterloo, Canada**
Mathematical software developer, External developer *May – July 2021*
Part-time job for the integration of my Maple software into the Maplesoft system.

University of Kassel, Germany **Kassel**
Mathematical software developer, Researcher *June 2020 – January 2021*
Developed a Mathematical software using Maple. My resulting package will be incorporated into Maple 2022.

AIMS-Cameroon **Limbe**
Teaching Assistant, Tutor *March 2019 – May 2019*
Tutoring students in learning pure and applied mathematics.

AIMS-Cameroon **Limbe**
Essay phase *April 2018 – May 2018*
Computer Algebra with the Computer Algebra System (CAS) Maxima.
Developing a program able to compute the power series representation of an important subfamily of hypergeometric type functions.

H2Altitude **Yaounde**
Developer in Computer Engineering *December 2016 – August 2017*
Data flow management using Talend (which also uses Java programming), MySQL and a little NoSQL and Apache Kafka on AWS.
As the company develops web applications, we were constantly using the languages Javascript, HTML 5, CSS 3, and the chosen framework was Symfony 2.
Working on pressure.

CIRAD **Yaounde**
Engineer Internship And Collaboration *February 2016 – October 2016*
Understanding, modeling and implementing an algorithm that predict the dynamics of forest processes (birth, growth and mortality).

- Engineer Internship (6 months):
  - Probability and Statistics: General clustering and Expectation-Maximization (EM) algorithm;
  - Programming with R : Practical solution of the model obtained, simulation and perfect coincidence with the R package flexmix.
- Collaboration, voluntary work (2 months) with Prof. Vivien Rossi to improve the efficiency of the R program obtained at the end of the internship: algorithmic and programming, differential calculus, optimization

ENSP-Cameroon **Yaounde**
Pre-engineer internship *July 2015 – September 2015*
Symbolic computation with the Computer Algebra System (CAS) Singular.
Algorithmic and programming, field theory, Galois theory.

Intelligentsia Corporation **Yaounde**
Mathematics teacher *Jun 2015 – July 2015*
Teaching General Algebra, Real Analysis, and basic Topology in a class of 30-45 students to prepare entrance at universities.

SCHOLARSHIPS

DAAD Erasmus+ program **Kassel**
Researcher, University of Kassel, Germany *June 2020 – December 2020*
A stay in Germany used for a partnership between AIMS-Cameroon and the University of Kassel. This founding allows me to extend my stay in Germany to the end of 2020 for some research works resulting from my Ph.D. thesis.

DAAD Erasmus+ program **Kassel**
Ph.D. student, University of Kassel, Germany *November 2019 – April 2020*
A stay in Germany used for a partnership between AIMS-Cameroon and the University of Kassel. This founding allowed me to extend my stay in Germany to April 2020 for the completion of my Ph.D. thesis.

DAAD STIBET **Kassel**
Ph.D. student, University of Kassel, Germany *November 2018 – January 2019*
First stay in Germany for my Ph.D. work.

PERSONAL PAPERS

- Teguia Tabuguia, Bertrand. **A variant of van Hoeij's algorithm to compute hypergeometric term solutions of holonomic recurrence equations**. *arXiv preprint arXiv:2012.11513*. **December 2020** (submitted).
- Teguia Tabuguia, Bertrand. **On 'Best' Rational Approximations to π and $\pi + e$**. *Preprints* **2020**, 2020050268 (doi: 10.20944/preprints202005.0268.v2) (to review before attempting to publish).
- Teguia Tabuguia, Bertrand. **An Algorithmic Random-Integer Generator based on the Distribution of Prime Numbers**. *Research Journal of Mathematics and Computer Science*, **2019; 3**:16. DOI: 10.28933/rjmcs-2019-06-1705.

COLLABORATIVE PAPERS

- Teguia Tabuguia, Bertrand and Wolfram Koepf. **Power series representations of hypergeometric type functions**. *In Corless R., Gerhard J., Kotsireas I. (eds): Maple in Mathematics Education and Research. MC 2020*. Communications in Computer and Information Science, Springer. **July 2021**.
- Teguia Tabuguia, Bertrand and Wolfram Koepf. **Hypergeometric Type power series**. Extended Abstract. *4th International Conference "Computer Algebra", Moscow*. Pages 105-108. **June 2021**.
- Teguia Tabuguia, Bertrand and Wolfram Koepf. **Symbolic computation of hypergeometric type and non-holonomic power series**. *arXiv preprint arXiv:2102.04157*. **February 2020** (submitted).

WORKSHOPS & CONFERENCES

Maple Conference 2021 **Waterloo (Canada)-Virtual**
Algorithm and Software presenter *November 02 – 05, 2021*
I am one of the presenters for the theme Algorithm and Software. *The talk will be about non-holonomic power series.*

4th International Conference "Computer Algebra" **Moscow-Virtual**
Contributed talk *June 28 – 29, 2021*
I gave a talk on hypergeometric type power series.

Maple Conference 2020 **Waterloo (Canada)-Virtual**
Algorithm and Software presenter *November 02 – 06, 2020*
I am one of the presenters for the theme Algorithm and Software. In this presentation, I made the first public demonstration of the most important result of my Ph.D. thesis: *Power series representations of hypergeometric type functions*.

ICMS 2020 **Braunschweig**
Software Demo presenter *July 13 – 16, 2020*
I was one of the software demo presenters. My algorithm, a variant of van Hoeij's algorithm, was accepted upon peer review.

Workshop on Applied Algebra **Braunschweig**
Poster presenter *June 07 – 08, 2019*
I was accepted to present a poster from my paper on randomness and the distribution of primes.

LANGUAGES

- **French**: Fluent *Native language*
- **English**: Good level *Main work language used since August 2017.*

- **German**: Basic *Level A1, Goethe Institute of Yaounde (10 September - 31 October 2018). A2 in progress.*

COMPUTER SKILLS

Very good computer and programming skills.

- **Maxima**: favorite Computer Algebra System (CAS), used since 2018.
- **Maple**: from the result of my Ph.D., I developed a mathematical software that will be incorporated into Maple 2022.
- **Sagemath**: main CAS used at AIMS-Cameroon (2017-2018).
- **Singular**: CAS used in pre-engineer internship at ENSP (3 months) (2015).
- **R**: main language used during my engineering internship (9 months).
- **Python**: used since 2016 for general programming: scientific computing, software development.
- **Most used web languages: HTML 5, CSS 3, Javascript, Php**: to develop web applications.
- **Java**: main programing language used for the three last years at ENSP Yaounde.
- **MySQL**: main system used for managing data bases at ENSP Yaounde (2013-2016).
- **Latex**: Used to produce pdf documents since 2014.
- **Other languages used in the past**: C, Prolog, Singular, UML (for design).
- **Operating System**: Linux, Windows.
- **Keyboard blind typing**: very good speed.

During my free time, last year I thought and developed the game called P&C Game, available on Google Playstore and at `https://bertrand-t3gu1.itch.io/pc-game`. A first version was done in Python, and a second using Javascript, CSS 3 and HTML 5. The latter was used to generate an apk-release for Google Playstore.

PERSONAL SKILLS

- **Fast learning**: Anything related to computer programming or mathematics is loved and quite easy to learn for me.
- **Perfectionist**: During my Ph.D. work, I always wanted my codes to have the best efficiency even though my supervisor was already satisfied.

VOLUNTEERING

Tutoring mathematics to a class of 10-15 students of the terminal C class at the Evangelical Church of Cameroon in the street Manguier of Yaoundé.

INTERESTS & HOBBIES

- **Computer programming**: Doing programming exercises in python from websites like Kattis, CodeChef.
- **Mathematics and their applications**: Computer Algebra, Number Theory, Advanced Statistics, Scientific Computing, Mathematical Modeling.
- **Movies, series**: Genius (Einstein), Irrational man, One Tree Hill, Numb3rs, Hannah Arendt, Jobs, X+Y.
- **Drawing**: Anything beautiful.
- **Singing**: Pop, R&B, like for The Fray, Gavin Degraw and James Arthur.
- **Dancing**: I have been a choreographer, I like harmonized dance.
- **Sport**: Football, my all time favorite players are in order Ronaldinho, Cristiano Ronaldo, Ronaldo and Samuel Eto'o.

REFERENCES

Prof. Dr. Wolfram Koepf
Professor in Computer Algebra, University of Kassel, Germany.
Ph.D. supervisor
Tel: +49 561 804 4245
Email: koepf@mathematik.uni-kassel.de

Dr. Jürgen Gerhard
Senior Director, Research at Maplesoft
Supervisor of my collaboration with the Maplesoft company when I was integrating my Maple software into their system.
Email: jgerhard@maplesoft.com

Prof. Dr. Marco Garuti
Academic Director of AIMS-Cameroon.
Professor in Algebraic Geometry, University of Padova, Italy and AIMS-Cameroon.
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Dr. habil. Vivien Rossi
Biostatistician researcher, CIRAD (https://www.cirad.fr)
University of Yaounde I and ENSP de Yaoundé
Main supervisor of my essay at ENSP de Yaoundé
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Prof. Dr. Werner Varnhorn
Center President of AIMS-Cameroon.
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