

# Anne Josiane Kouam

## PostDoctoral Researcher

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### Research Interest

I'm passionate about everything that concerns human behavior in mobility and communication, natural language processing, and its applications. In detail, my research interests are :

- Data driven Fraud Detection and Security
- Human behavior in communication
- Language Processing and Leveraging
- AI security and privacy

### Education

- Nov 2019–May 2023 **Doctoral Degree**, *INRIA, Ecole Polytechnique-IPP*, France.
- Title: Bypass frauds in cellular networks : understanding and mitigation
  - Goal: Fully understand fraudsters behavior and literature limitation to Build advanced models from cellular network datasets to detect and mitigate fraud
  - Originality : Fraudsters have evolving fraudulent strategies and use AI to simulate human behavior
  - Advisors : Aline Carneiro Viana (Research director, INRIA) & Alain Tchana (Prof., ENS Lyon)
- 2014–2019 **Master Degree in Computer Science**, *Ecole Nationale Polytechnique*, Yaounde, Cameroon.
- Valedictorian, Excellent Grade, GPA: 3.81/4.0.
- 2014 **Baccalaureat (High School Diploma)**, *General Bilingual High School of Mendong*, Cameroun, Valdedictorian.

### Work Experience

#### Research

- May 2023–Now **Research Engineer**, *INRIA Saclay*, France, Cellular network datasets analysis and modeling.
- Sep 2022–Apr 2023 **Doctoral visit**, *Telecom Paris*, France, Cellular signaling data collection and analysis from Faraday shield experimentation.
- Nov -Dec 2022 **Doctoral visit**, *CNR Pisa*, Italy, Cellular network datasets (i.e., CDRs) modeling and generation.

#### Teaching

- Sep–Dec 2021 **Networking: switching and routing**, *Paris-Saclay University*, France, L2, TD & TP, 24h.
- 2021 **MOOC Trainer: Fundamentals of Network and Information Systems**, *Audience: CAPES France*, Dissemination: Fun-Mooc Platform and also available on YouTube!, 24h.
- Oct–Dec 2019 **Distributed Systems and Virtualization**, *Ecole Nationale Polytechnique*, Yaounde, Cameroon, L3, 12h.

#### Internships or Programs

- Mar–Sep 2019 **Research Internship**, *IRIT Toulouse & I3S Nice*, France, In-memory storage design for Function As A Service (FAAS).
- Jul–Sep 2018 **Software engineer Internship**, *Computer Incident Response Team (CIRT)*, Cameroon. Design and validation of an application for mobile subscribers' relations analysis useful for fraudsters identification
- Jul 2015–Aug 2016 **CIMI program member**, *PolytechValor, Ecole Nationale Polytechnique*, Yaounde, Cameroon.
- Long period training to acquire skills such as speed reading, rapid typing, concentration, memorization, verification, etc.
  - Organization of government conference for company workers
  - Coaching and training of kids and high school students in vacations

#### Student supervision

- Feb–Aug 2021 **Cliton Nyobe**, *M2 student, INRIA Intern*, Deployment and configuration of a hardware architecture for capturing and analyzing cellular network signaling, Excellent graded Defense.

Aug 2022-Now **Gaelle Yonga**, M2 student, University of Douala, Geographical assignment of human mobility records.

## Publications

### International Conferences and Workshops

OFC: an opportunistic caching system for FaaS platforms, Djob Mvondo, Mathieu Bacou, Kevin Nguetchouang, Lucien Ngale, Stéphane Pouget, **Josiane Kouam**, Renaud Lachaize, Jinho Hwang, Tim Wood, Daniel Hagimont, Noël De Palma, Bernabé Batchakui, and Alain Tchana. **EuroSys 2021 (A Rank)**.

Simulating SIMBox frauds for detection investigation, **Anne Josiane Kouam**, Aline Carneiro Viana, Alain Tchana. **ACM CoNext Student Workshop 2022**.

LSTM-based generation of cellular network traffic, **Anne Josiane Kouam**, Aline Carneiro Viana, Alain Tchana. IEEE Wireless and Communications and Networking Conference **WCNC'23**.

### Journals

SIMBox Bypass Frauds in Cellular Networks: Strategies, Evolution, Detection, and Future Directions, **A. J. Kouam**, A. C. Viana and A. Tchana. **IEEE Communications Surveys & Tutorials**, vol. 23, no. 4, Fourthquarter 2021 (**Impact Factor 23.7**).

### National Conferences

Génération de traces cellulaires réalistes, **Anne J. Kouam**, Aline C. Viana, Aurélien Garivier, Alain Tchana. **CORES 2022**

Signalisation cellulaire pour la detection des fraudes de contournement, **Anne J. Kouam**, Aline C. Viana, Philippe Martins, Cedric Adjih, Alain Tchana. **CORES 2023**

## Service to the scientific community

Sub-reviewer	IEEE Transactions on Network and Service Management
Artefact Evaluation Committee	EuroSys'21 (A Rank), USENIX Security'22 (A* Rank), CoNext'22 (A Rank)
Shadow PC	Algotel & Cores'21 (National conferences, France)
Technical PC	International Conference on Networking and Services (ICNS'23)
Conference organization	"Feedback days", Ecole Nationale Polytechnique, Yaounde, Problem Solving session author
Conference organization	Computer Science Workshop with Women in CS Session, Ecole Nationale Polytechnique & UY1, Yaounde, Cameroon
Session chair	<i>Machine learning in and of Networks</i> , CoNext'22 Student workshop, Rome, Italy

## Research collaborations

### Projects

- Philippe Martins **C1.**, Investigation of cellular signaling for SIMBox fraud detection in a Faraday Cage, *Telecom Paris, France*.
- Luca Pappalardo **C2.**, Generation of realistic CDRs aware of traffic and mobility correlations based on real-world traces with a wide spatio-temporal coverage, *CNR, Italy*.  
Project done with Leo Ferres
- Leo Ferres **C3.**, Generation of realistic CDRs aware of traffic and mobility correlations based on real-world traces with a wide spatio-temporal coverage, *Universidad del Desarrollo, Chili*.

## List of talks

- 2023 May 22 **Signalisation cellulaire pour la detection des fraudes de contournement**, *CORES 2023*, Cargèse (Corse), France.
- 2023 May 11 **SIMBox bypass frauds in cellular networks: understanding and mitigation**, *Thesis Defense*, Palaiseau, France.

- 2023 Mar 27 **LSTM-based generation of cellular network traffic**, WCNC 2023, Glasgow, Scotland.
  - 2023 May 22 **Diving into the illegitimate: international bypass fraud mitigation**, *Invited Talk*, TU Berlin, Germany.
  - 2022 Dec 20 **On the intricacies of generating individuals' cellular network datasets**, *Computer Science Workshops*, Yaounde, Cameroon.
  - 2022 Dec 9 **Simulating SIMBox frauds for detection investigation**, *CoNext'22 Student workshop*, Rome, Italy.
  - 2022 May 30 **Génération de traces cellulaires réalistes**, *CORES 2022*, Saclay, France.
  - 2022 Apr 28 **Simulation of bypass frauds in cellular networks**, *GDR RSD 2022*, Rennes, France.
  - 2021 Sep 21 **What is International Bypass fraud ?**, *Women in Security and Cryptography Workshop (WISC)*, Online.
  - 2021 Jun 1 **Detection of bypass frauds in cellular network datasets**, *Workshop on Cloud, Storage and Virtualization*, Brest, France.
  - 2020 Dec 15 **Reproducible Engineering**, *Feedback Days*, Ecole Nationale Polytechnique, Remote talk.
- [Posters](#)
- 2023 Feb 10 **On the intricacies of per individual cellular network datasets generation**, *NetSci-X*, Buenos Aires, Argentina.
  - 2022 Aug 31 **Producing complex realistic Call Detail Records**, *IDESSAI Summerschool*, Saarbrücken, Germany.
  - 2022 May 16 **Zen: producing complex realistic Call Detail Records**, *Doctoral Day IPP*, Palaiseau, France.

## Administrative Responsibilities

- From Dec 2021 Center Committee Member, INRIA Saclay
- From June 2021 Co-Founder of CCF (*Cameroonian Researchers in France*) Association
- From Apr 2021 WebMaster of INRIA Associated team MLNS2
- 2020-2021 Scientific popularization mission (2020-2021), INRIA Saclay

## Awards and Honors

- Best Student Paper **CoRes 2023**.
- Fellowship **SoBigData++ Transnational Access**, *Grant for a Short-Term Scientific Mission*.
- Diversity Grant **Usenix SOUPS & ATC' 21**.
- Student Grant **ACM Sigmetrics' 21**.
- Fellowship **INRIA CORDI-S 2019**, *Grant for a 3 year PhD*.

## Popularization

I like sharing my research to a wider audience, especially with the hope to encourage young girls to get an interest in computer science.

- Dec 2022 **Women in CS Session Panelist**, *Computer Science Workshop, Ecole Polytechnique, Yaounde, Cameroon*, Discussions with undergraduates about the researcher career, balance with personal lives, and challenges faced by female researchers.
- Feb 2022 **Workshop leader**, *Rendez-vous des Jeunes Filles Mathématiciennes et Informatiennes (RJMI)*, INRIA Saclay, 2 days program with 25 selected Young girls interested in Mathematics and Computer Science.
- Jan 2022 Talk to 3rd grade students in an observation internship, INRIA Saclay
- Oct 2021 **Stand Animation at the science festival**, *Institut Polytechnique Paris (IPP)*, Welcoming the general public and explaining in an off-line style the concepts of algorithms and encryption.
- Jul-Sep 2021 **Video Production: Explained Wireless Communications**, *Paris-Saclay Science Festival Saclay*, in French.
- Mar 2021 **Talk: What is the job of a researcher? Presentation of the INRIA Institute**, *"mathematics week", Creteil Academy*.

Feb 2021 **Workshop leader**, *Rendez-vous des Jeunes Filles Mathématiciennes et Informatiennes (RJMI)*, INRIA Saclay, 2 days program with 25 selected Young girls interested in Mathematics and Computer Science.

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## Languages and Programming

Langages French (C2), English (C1), Spanish (A2)  
Programming Python, C/C++, Java, Shell  
Langages

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## Interests

Leisure Graphic design, Piano, Cooking, French literature  
Association Co-founder of Cadres360, a christian association for workers well-being in all domains