

DJOB MVONDO

Postdoctoral Researcher

PERSONAL DATA

PLACE AND DATE OF BIRTH: Cameroun | 31 March 1998 | 22 years
ADDRESS: 3 Avenue Albert Einstein, Villeurbanne, France
PHONE: +33 695396684
EMAIL: mbarbet@ed.ac.uk
WEBSITE: djobiii2078.github.io
RESEARCH TEAM: ICSA, School of Informatics
The University of Edinburgh, Scotland
RESEARCH INTERESTS: ♦ Operating System
♦ Virtualization
♦ Cloud Computing
♦ Fault Tolerance

EDUCATION

DEC 2020 - EARLY 2022 | **Postdoc in Computer Science** at the **University of Edinburgh**, Scotland
Member of the ICSA team of the School of Informatics, I work with Antonio Barbalace on scheduling in virtualized systems. Our main goal is to provide pseudo-formal models to better understand and design adequate schedulers to improve throughput and reduce I/O latencies.

MAR 2018-DEC 2020 | **Ph.D. in Computer Science** at the **University of Grenoble Alpes**, France
Affiliation : LIG (Laboratoire d'Informatique de Grenoble)
Title : *Resilience and sizing in virtualized environments*
Defended on the 18th December 2020, with the jury composed of:

M.	Pascal	Felber	President of jury/Reviewer	Switzerland
M.	Willy	Zwanepoel	Reviewer	Australia
M.	Marc	Shapiro	Examiner	France
M.	Renaud	Lachaize	Examiner	France
M.	Alain	Tchana	Co-supervisor	France
M.	Noël De	Palma	Supervisor	France

SEP 2011-SEP 2017 | **Master II in Computer Science**, Cameroon
Received at the **National Advanced School of Engineering**, Yaoundé, Cameroon
Advisors: Prof. Daniel HAGIMONT, Prof. Alain TCHANA, and Ass. Prof Boris TEABE
Defended on the 08th September 2017.

AUG 2011 | **G.C.E Advanced Level** at YAOUNDÉ, Cameroun
Received at Pi and Ju International Anglo-saxon College.

MY RESEARCH OVERVIEW

I try to do relevant systems research. My main goal is to improve (or redesigning) virtualized systems. Regarding the latter intent, since my internship, I work at improving resource sizing and fault tolerance of components in a virtualized infrastructure. Most of my work resulted in hacks in standart open-source operating systems kernels such as Linux and FreeBSD,

and standart virtualization systems such as Xen and KVM. These tweaked systems are open-sourced and available to the research community at [djobiii2078.github.io/#experience](https://github.com/djobiii2078). The work achieved till now has been published in several conferences and workshops, including four (4) major international conferences in the system field. My current work is in the previous ones' continuity, improving and building effective virtualized systems for both IaaS, PaaS, SaaS, and FaaS.

PUBLICATIONS AND SCIENTIFIC PRODUCTION

In the System field, it is much more difficult to get a paper accepted in an outstanding conference than in an outstanding journal. Hence, conferences are most selective than journals (see <https://homes.cs.washington.edu/~mernst/advice/conferences-vs-journals.html>).

Therefore, my research are mainly published in conferences. For the conference rankings, I used the 2019 Australian Ranking (<http://portal.core.edu.au/conf-ranks/>) which ranks conferences and journals with A*, A, B and C.

INTERNATIONAL PUBLICATIONS

- ◆ **FaaSCache: an opportunistic free caching system for FaaS platforms**
Djob Mvondo, Mathieu Bacou, Kevin Nguetchouang, Lucien Ngale, Stephane Pouget, Josiane Kouam, Renaud Lachaize, Jinho Hwang, Tim Wood, Daniel Hagimont, Noel De Palma, Batchakui Bernabé, Alain Tchana
To appear in proceedings of European Conference on Computer Systems 2021
EUROSYS 2021 - Rank A
Code source: <https://gitlab.com/lenapster/faascache/>
- ◆ **Fine-Grained Fault Tolerance For Resilient Virtual Machine Monitors**
Djob Mvondo, Alain Tchana, Renaud Lachaize, Daniel Hagimont, Noel De Palma
In proceedings of IEEE/IFIP International Conference on Dependable Systems and Networks
DSN 2020 - Rank A
DOI: 10.1109/DSN48063.2020.00037
Code source: <https://github.com/r-vmm/R-VMM>
- ◆ **Closer: A new design principle for the privileged virtual machine OS**
Djob Mvondo, Boris Teabe, Alain Tchana, Daniel Hagimont, Noel De Palma
In proceedings of IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems
MASCOTS 2019 - Rank A
DOI: 10.1109/MASCOTS.2019.00016
- ◆ **Memory flipping: a threat to NUMA virtual machines in the Cloud**
Djob Mvondo, Boris Teabe, Alain Tchana, Daniel Hagimont, Noel De Palma
In proceedings of IEEE International Conference on Computer Communications
INFOCOM 2019 - Rank A*
DOI: 10.1109/INFOCOM.2019.8737548
Code source: <https://github.com/djobiii2078/i-flipping>
- ◆ **When eXtended Para - Virtualization (XPV) Meets NUMA**
Vo Quoc Bao Bui, Djob Mvondo, Boris Teabe, Kevin Jiokeng, Patrick Lavoisier Wapet, Alain Tchana, Gaël Thomas, Daniel Hagimont, Gilles Muller, Noel De Palma
In proceedings of European Conference on Computer Systems
Eurosys 2019 - Rank A
DOI: 10.1145/3302424.3303960
Code source: <https://github.com/bvqbao/numaVirtualization>

NATIONAL PUBLICATIONS

- ♦ **FaaSCache: Système de Cache mémoire opportuniste et sans surcoût**
Kevin Nguetchouang, Lucien Ngale, Stephane Pouget, **Djob Mvondo**, Mathieu Bacou, Renaud Lachaize
Journées Cloud 2020
- ♦ **Memory Flipping: How NUMA affects virtual machines ?**
Djob Mvondo, Boris Teabe, Daniel Hagimont, Noel De Palma
COMPAS 2018
- ♦ **SGX Performance Improvement Using A Smart Function Colocation Algorithm**
Eric Mugnier, **Barbe Thystère Mvondo Djob** and Alain Tchana
COMPAS 2019
- ♦ **Hardware Assisted Virtual Machine Page Tracking**
Stella Bitchebe, **Djob Mvondo**, Alain Tchana, Laurent Réveillère, Noel De Palma
COMPAS 2019

MENTORING ACTIVITY

- ♦ **Lucien Arnaud**, currently Ph.D. at the University of Picardie Jules Vernes, France.
TECHNICAL SUPERVISOR during his Master Internship (Mar-Sep 2020) at LIP, ENS Lyon, France.
Period : March-September 2020
Title : ESTIMATION DES BESOINS EN RESSOURCES DES FAAS AU TRAVERS DE L'APPRENTISSAGE AUTOMATIQUE : CAS DE LA PLATEFORME FAAS APACHE OPENWHISK
- ♦ **Kevin Nguetchouang**, currently Ph.D. at ENS Lyon, France.
TECHNICAL SUPERVISOR during his Master Internship (Mar-Sep 2020) at LIP, ENS Lyon, France.
Period : March-September 2020
Title : IMPLÉMENTATION DU STOCKAGE MÉMOIRE POUR LES ENVIRONNEMENTS FAAS. CAS D'OPENWHISK.
- ♦ **Kouam Djuigne Josiane**, currently Ph.D. at Inria, Paris-Saclay, France.
TECHNICAL SUPERVISOR during her Master Internship (May-Sep 2019) at I3S, Nice, France.
Period : March-September 2019
Title : IMPLÉMENTATION D'UN SYSTÈME DE STOCKAGE IN-MEMORY POUR LES SERVERLESS
- ♦ **Stella Bitchebe**, currently Ph.D. at I3S, Nice, France
TECHNICAL SUPERVISOR during her Master Internship (Mar-Sep 2018) at IRIT, Toulouse, France.
Period : March-September 2018
Title: TECHNIQUE D'ESTIMATION DU WORKING SET BASÉE SUR LE PML (PAGE MODIFICATION LOGGING)
- ♦ **Yuhala Peterson**, currently Ph.D. at IUN, Neuchatel, Suisse
TECHNICAL SUPERVISOR during his Master Internship (Mar-Sep 2018) at IRIT, Toulouse, France.
Period : March-September 2018
Title : MEMORY VIRTUALIZATION OVERHEAD MITIGATION USING CONTIGUOUS MEMORY VIRTUAL MACHINES. CASE STUDY: XEN VIRTUALIZATION SYSTEM

SCIENCE OUTREACH

TALKS

- ◆ **28 Jan 2021** | Invited Talk at Wide, Inria Team, Rennes, France
Impact de la résilience et du dimensionnement sur les applications dans des environnements virtualisés
- ◆ **29 Jun - 02 July 2020** | DSN 2020, Online via Microsoft Teams
Fine-Grained Fault Tolerance For Resilient Virtual Machine Monitors
- ◆ **12 Feb 2020** | Grascomp-Eurosys Shadow PC joint Workshop 2020, Brussels, Belgium
FaaS-Cache - Speeding up Function As A Service Execution Times
- ◆ **22-25 Oct 2019** | Mascots 2019, Rennes, France
Closer: A new design principle for the privileged virtual machine OS
- ◆ **30 Apr - 02 May 2019** | Infocom 2019, Paris, France
Memory Flipping: a threat to NUMA virtual machine in the Cloud
- ◆ **25-28 Mar 2019** | Eurosys 2019, Dresden, Germany
- ◆ **04-08 Feb 2019** | GDR/ASF Winter School 2019, Pleyne-Sept Laux, France
Memory Flipping: a threat to NUMA virtual machine in the Cloud
- ◆ **03-06 Jul 2018** | Compas 2018, Toulouse, France
Memory Flipping: How NUMA affects virtual machines ?

MOBILITY

- ◆ **Dec 2020 - Now** at *Edinburgh, Scotland, United Kingdom*: Postdoctoral researcher within the ICSA team of the Informatics laboratory of the University of Edinburgh.
- ◆ **Nov 2019 - Dec 2020** at *Lyon, France*: Research mission within the AVALON team of the LIP laboratory at ENS LYON.
- ◆ **Oct 2018 - Oct 2019** at *Nice, France*: Research mission within the Computer Science, Signal, and Systems laboratory in Sophia Antipolis.
- ◆ **Nov 2018** at *Grenoble, France* : Seminar within the LIG lab at Grenoble.
- ◆ **Apr 2018 - May 2018** at *Grenoble, France*: Research seminar within the LIG lab at Grenoble.
- ◆ **Mar 2017 - Sep 2017** at *Toulouse, France*: Master Internship result of a partnership between ENSP Yaoundé and IRIT lab in Toulouse.

INTERNATIONAL COLLABORATIONS

- ◆ Timothy Wood-Associate Professor at The George Washington University (USA) and Jinho Hwang at IBM Research (USA). We worked at designing and implementing FaaS-Cache, a transparent, vertically and horizontally elastic in-memory caching system for Function as a Service platforms (FaaS). This work is under review at EUROSYS'21.

POSTERS

- ◆ **Type I vs Type II hypervisors. Let's End this !**
Djob Mvondo, Alain Tchana, Noël De Palma.
GDR RSD 2020

- ◆ **Hardware Assisted Virtual Machine Page Tracking**
Stella Bitchebe, **Djob Mvondo**, Alain Tchana, Laurent Réveillère, Noel De Palma
Compas 2019
- ◆ **When eXtended Para-Virtualization (XPV) Meets NUMA**
Bao Bui, **Djob Mvondo**, Boris Teabe, Kevin Jiokeng, Lavoisier Wapet, Alain Tchana, Gaël Thomas, Daniel Hagimont, Gilles Muller, Noel DePalma
Eurosys 2019
- ◆ **Memory Flipping: How NUMA affects virtual machines ?**
Djob Mvondo, Boris Teabe, Daniel Hagimont, Noel De Palma
Compas 2018

GRANTS

- ◆ Student Travel Grant, ASPLOS 2020.

RESPONSABILITIES

SERVICE TO THE COMMUNITY

- ◆ Representative of non-permanent staff at the LIP laboratory for two months
(Oct. - Dec. 2020), ENS Lyon, France.
- ◆ **Session chair** for Session 5 for **Journées Cloud 2020** conference.
- ◆ Member of the **Artifact Evaluation Committee (AEC) OSDI 2020**
One of the best conferences in the systems fields.
- ◆ Member of the **Social Media Team for Eurosys 2021**, alongside:
Kostis Kaffes, Iacovos G. Kolokasis, and Vijay Chidambaram (*Publicity Chair for Eurosys'21*)
- ◆ **Student Volunteer** for the organization of the "**Journées Cloud 2020**" at Lyon
Website designer with Stella Bitchebe : <https://journéescloud20.sciencesconf.org/>
- ◆ **Shadow PC** for the 2020 European Conference on Computer Systems (**Eurosys 2020**)
- ◆ **Sub-Reviewer** for the 2019 International Conference on Big Data (**IEEE BigData 2019**)
Main Reviewer : Noel DePalma
- ◆ **Sub-Reviewer** for the CRI'19 Conference
Main Reviewer : Alain Tchana
- ◆ **Student Volunteer** for the organization of the **Compas 2018** Conference at Toulouse

CONFERENCE ORGANIZATION

- ◆ Co-organiser alongside Kevin Jiokeng and Kouam Josiane of the **JOURNÉE RETOUR D'EXPÉRIENCE 2020** at Polytechnique Yaoundé, Cameroon.
<https://sites.google.com/view/retourxpenspygi2020/accueil>.
- ◆ Organiser of the **JOURNÉE RETOUR D'EXPÉRIENCE 2018** at Polytechnique Yaoundé, Cameroun. <https://sites.google.com/view/retour-dexperience-2018/accueil>

TEACHING

- ◆ **Distributed Systems**, TD+TP, ENS Lyon, France
Teaching Assistant with Eddy Caron
Status: Temporary employee (Vacataire)

Target: M1 students

Teaching hours: 20

Academic year: 2019 - 2020

Description: I designed the practical courses for Distributed Systems 2019/2020 and accompanied the students during the practical sessions. I also designed their practical exams and corrected the students exam sheet papers.

Resources produced: <http://tiny.cc/ejk7tz>

◆ **ACM Programmation Sportive**, TP, ENS Lyon, France

Teaching Assistant with Bao Bui & Eric Thierry

Status: Temporary employee (Vacataire)

Target: L3 students

Teaching hours: 42

Academic year: 2019 - 2020

Description: This course prepares students for programming contests such as the ACM Programming Contest. We (I, Bao Bui and Eric Thierry) accompanied the students through various programming exercises on Online Judge.

<http://perso.ens-lyon.fr/eric.thierry/ACM/>

In parallel, I also help design courses for the operating system/virtualization course offered by Alain Tchana to M1 and M2 students at ENS Lyon, France. You can find the resources I produced here: <http://tiny.cc/8kk7tz>.

WORK EXPERIENCE

MAR 2017 SEP 2017	Research Internship IRIT (Institut de Recherche en Informatique de Toulouse) , Toulouse, France Our goal was to revisit the design of type I hypervisors such as Xen in order to propose a scheme for dynamic resource allocation (cpu+memory) for a central component which we referred as the privileged virtual machine (pVM). Furthermore, our design had to take in account novel memory architectures such as NUMA (non-uniform memory architecture) where a distance dimension renders allocation more tricky. Advisors: Prof. Daniel HAGIMONT, Prof. Alain TCHANA, and Ass. Prof Boris TEABE
SEP 2016 MAR 2017	L1 and L2 Teaching ENSP, Yaoundé, Cameroun I gave courses of Operation System to L1 students during the first semester of 2016-2017. I also gave practical courses of Object Oriented Programming and IHM (Interface Homme Machine) to L1 and L2 students respectively during the same semester. Referees: Dr. Batchakui BERNABÉ and Ing. Moubitang
MAY 2016	Student Volunteer ENSP, Yaoundé, Cameroun As a student volunteer, I participated in the set up of the logistic for the symposium organized on the theme "L'apport du Cloud et du Big Data dans l'économie numérique" at ENSP. It lasted 7 days from 14-21 May 2016. Referees: Prof. Alain TCHANA
JUL 2015 OCT 2016	Trainee Internship LIRIMA (Laboratoire International de Recherche en Informatique et Mathématiques Appliquées) , Yaoundé, Cameroun This work was a result of a collaboration between the University of Yaoundé I and Ecole Polytechnique Fédérale de Lausanne (EPFL) under the RESCIF banner. The idea was to design and develop a caching system in order to speed up critical media resources load time for online courses. This enabled students to access these courses despite the low network throughput. The system is currently deployed at the National School of Engineering of Yaoundé and Institut National Polytechnique Félix Houphouët-Boigny (INP-HB) of Yamoussoukro in Ivory-Coast.

Advisor: Dr. Batchakui BERNABÉ

JUL 2015 Trainee Internship
SEP 2015 **Ministry of Defense**, Yaoundé, Cameroun

We developed a software to enable army instructors to deliver media resources for a course exploitable by military members and track the progress of each member for a given course. The software named **HELIOS** is currently deployed and used at a military unit carrying the same name **HELIOS**.

Advisor: Eng. Moubitang

EXTRA-ACTIVITIES

- ◆ Co-founder of louma-jobs.com, louma-concours.com, and concoursinfo.com
- ◆ Design and Technical Director of **IGamers Cameroun**. <http://tiny.cc/y3muhz>

CERTIFICATIONS

- Apr 2019 Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning by **deeplearning.ai** on Coursera
<http://tiny.cc/4otrbz>
- Feb 2019 Google Cloud Platform Fundamentals: Core Infrastructure by **Google Cloud** on Coursera
<http://tiny.cc/3qtrbz>
- Jan 2018 Getting Started with Kubernetes Engine by **Google Cloud** on Coursera
<https://goo.gl/5U67rp>
- Dec 2017 Google Cloud Platform Fundamentals for AWS Professionals by **Google Cloud** on Coursera
<https://goo.gl/6C2r9J>
- Dec 2017 Responsive Website Basics: Code with HTML, CSS, and Javascript by **University of London & Goldsmith** on Coursera
<https://goo.gl/6C2r9J>
- Dec 2017 Machine Learning by **Stanford University**
<https://goo.gl/6C2r9J>

MISCELLANEOUS

- ◆ Youngest African Ph.D. <https://cutt.ly/ukV7Ywg>.
- ◆ Mentioned as a youth model by the president of Cameroon in his speech for the Youth day 10 February 2021. <https://cutt.ly/nkV7R7I>.

INTERESTS

Technology, Open-Source, Programming
Paradoxes in Decision Making, Behavioural Finance
Football, Martial Arts (Taekwondo Black Belt), and Video Games