

Alain Tchana

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(not up to date, should move to Grenoble INP's platform)



Work experience

- Since 2022: Professor at Grenoble INP – LIG lab
- 2019 - 2022: Professor at ENS Lyon – LIP lab
- 2018 - 2019: Professor at Nice University – I3S lab
- Since 2015: Invited Professor at Ecole Nationale Polytechnique de Yaoundé, Cameroon
- 2013 - 2018: Associate Professor at INP Toulouse – IRIT lab
- 2011 - 2013: Postdoctorate at UGA Grenoble – LIG lab

Diplomas

- December 2017: HDR in computer science - INP Toulouse – IRIT lab
- 2008 - 2011: Ph.D. in computer science - INP Toulouse – IRIT lab
- 2008: Graduated from Université de Yaoundé I - Cameroon

PEDR (research grants) from 2015-2019 and since 2021

Geographical mobility. I moved to several places during my career: Cameroun → Toulouse → Grenoble → Toulouse → Nice → Lyon → Grenoble. These movements could have negatively impacted my research dynamics as it is not obvious to integrate and adapt to a new place. However, as one can see below, these movements did not affect my productivity.

Research topic mobility. During my Ph.D. thesis and my post-doctorate, my research was in autonomous administration, a sub-field of Middleware. I participated in developing the first orchestrators for the cloud (RoboConf - <http://roboconf.net/fr/>, transferred to Linagora). I have 6 publications in Middleware, the major conference of that domain. Once permanent (in 2013), I oriented my research in Systems, particularly Virtualization and Operating Systems. I am interested in improving application performance and saving energy. System research domain is at the junction of several research domains. I have 6 publications in EuroSys (a major conference in System), 2 publications in Infocom (major conference in Networks), 2 publications in DSN and one publication in RAID (major conferences in Security), 4 publications in Sigmetrics (major conference in Networks and Systems). My futur research project (see below) is pluridisciplinary. It combines Law and Systems to take into account data privacy laws at the operating system level.

Mutant: My research project during the next 10 years. The last decade has seen the rapid digitalization of our societies (health, politics, transport, and so on), resulting in the appearance of a large diversity of applications and hardware that the operating system (OS) must consider. In addition, new critical concerns have emerged such as data privacy and carbon emission. Consequently, the OS (Linux, FreeBSD, macOS, and Windows), which is at the heart of the machine, includes general-purpose sub-optimal policies (memory management, process scheduling). Their customization is arduous, not within reach of system integrators, and requires machine reboot (thus causing unavailability). The fundamental problem of popular Oses is their monolithic nature, which enforces packaging all OS services in a single binary that runs in the privileged mode of the CPU (kernel space), where customization is intricate.

Mutant resurrects microkernels, which advocates uncoupling OS services and running all of them in the unprivileged mode of the CPU (userspace), where quick customization is conceivable. Given an existing monolithic OS, *Mutant* mutates it into another one (called fluid OS) whose services can be specialized by integrators to meet a specific setup for achieving optimal performance, energy consumption, and privacy.

Mutant should answer four questions:

Q1: Designing. How to redesign a monolithic OS without sacrificing maintainability? Based on Linux and instrumentation, we will identify and instrument all OS functions that will allow service explode and outsourcing into userspace.

Q2: Abstracting. Which abstraction suits userspace OS services as Process and Thread are respectively strongly and weakly isolated. We will invent the appropriate first-class concepts using hardware and software co-design.

Q3: Characterizing. What should be the language support provided to integrators? We will characterize existing high-level languages and we will create Domain Specific Languages.

Q4: Verifying. How to keep the resulting OS as safe as the original one? We will verify all our OS extensions, userspace libraries, and communication protocols using verification tools and techniques.

To show the effectiveness of *Mutant*, I will study several use cases, targeting energy consumption, performance, and privacy goals. Concerning the latter for instance, I will design a GDPR compliant file system services so that all applications could take benefit from it. By considering GDPR at the OS-level, my approach prevents application developers and companies to deal with the law. I will conduct this pluridisciplinary work in collaboration with law researchers. We have published on arXiv (<https://arxiv.org/abs/2205.10929>) a vision paper.

Five selected publications.

1- *Out of Hypervisor (OoH): Efficient Dirty Page Tracking in Userspace Using Hardware Virtualization Features*. SC 2022.

<https://dl.acm.org/doi/abs/10.5555/3571885.3572000>

Out of Hypervisor (OoH) is a new virtualization research axis advocating the exposure of individually current hypervisor-oriented hardware virtualization features to virtual machines. This way VM's processes can also benefit from those features. We leveraged OoH to improve checkpoint/restore, garbage collectors, and buffer overflow detection systems.

2- *Fine-Grained Isolation for Scalable, Dynamic, Multi-tenant Edge Clouds*. *Usenix ATC 2020*.

<https://www.usenix.org/system/files/atc20-ren.pdf>

We built EdgeOS, the first operating system for IoT 5G and above. Among others, EdgOS reduces task startup latency by about 170 times compared to Linux, which is the dominant system in IoT devices.

3- *Drowsy-DC: Data center power management system*. *IPDPS 2019*.

<https://hal.archives-ouvertes.fr/hal-02891652/document>

We proposed a novel data center (DC) power management system called Drowsy-DC. Based on machine learning, it is able to identify virtual machines (VMs) which have matching patterns of idleness. These VMs can thus be colocated on the same server so that their idle periods are exploited to put the server to a low power mode (suspend to RAM).

4- *Welcome to zombieland: practical and energy-efficient memory disaggregation in a datacenter*. *EuroSys 2018*.

<https://dl.acm.org/doi/10.1145/3190508.3190537>

We proposed an effortless way for disaggregating the CPU-memory couple for improving energy consumption. This work also led to a patent. We introduced a new sleep state (called zombie) which allows the memory of a suspended server (thus save energy) to be remotely accessible.

5- *Swift Birth and Quick Death: Enabling Fast Parallel Guest Boot and Destruction in the Xen Hypervisor*. *VEE 2017*.

https://www.ssrq.ece.vt.edu/papers/vee_2017.pdf

«Auto scaling is a very powerful tool, but it can also be a double-edged sword. Without the proper configuration and testing it can do more harm than good.» [The Netflix Tech Blog, Jan 2012]. This is a well known issue in the cloud: performance unpredictability. We identified and solved the root cause of this specific Netflix problem, which was the variation of virtual machine (VM) startup time due to a roughly protected critical section virtualization system. Our discovery led Xen virtualization system (used by Amazon) to take this problem into account in future versions.

Outreach

- **International**
 - Prix de la Francophonie pour Jeunes Chercheurs 2021
 - Jury member of the EuroSys 2022 Roger Needham PhD Award
 - Jury member of The Dennis M. Ritchie Thesis Award 2022
 - PC members NSDI 2024, hotOS 2023, EuroSys 2023, ATC 2023 and 2022, DSN 2022 Reviewer for ACM TOCS in 2021 and 2022
 - Session at SOSP 2021 Diversity Workshop
 - Sponsor chair at EuroSys 2021
 - In 2022, keynote speaker at the 11th IEEE International Conference on Cloud Networking in Paris
 - In 2022, Keynote speaker at Eurosys Doctoral Workshop 2021
 - In 2021, keynote speaker at CUSO (Doctoral Program in Computer Science of the Universities of Fribourg, Geneva, Lausanne, Neuchâtel and Bern) in Neuchâtel
 - In 2020 I gave a talk at Google Mountain View about Odile, an Android tracing tool (see Raid'22 paper)
 - Reviewer and jury member of Iorgulescu Calin's Ph.D. thesis at EPFL
 - Since 2020, I am member of the Africa AI board of United Nations Organization
 - In 2015, organizer of the International Workshop on Virtualization Technologies

- I focus on conference organization in Africa, especially Cameroon, which is my originate country. Since 2016, I have co-organized 6 conferences. All of these conferences involved permanent researchers and students from France, from Cameroon, and other countries in Africa (for three conferences)
- Since 2015, I am invited Professor at Ecole Nationale Polytechnique de Yaoundé, Cameroon
- **France**
 - Prix chercheur junior du GDR RSD 2021
 - Prix du concours d'idées innovantes Inria 2021
 - In 2022, keynote speaker at Comité des Equipes-Projets (CEP) du centre Inria de l'Université Grenoble Alpes
 - In 2022, keynote speaker at IEEE ISEP Student Branch Scientific Day: Computer science X Circuits and Systems in Paris
 - In 2021, keynote speaker at Cloud Days, organized by Outscale
 - In 2021, keynote speaker at ENS Lyon SIEST
 - In 2020, keynote speaker at IRISA in Rennes
 - In 2020, keynote speaker at Telecom SudParis
 - In 2019, keynote speaker at GDR RSD/ASF Winter School 2022 in Grenoble
 - In 2019, keynote at GRD RSD Days in Nantes
 - In 2019, keynote speaker at Open Source Innovation Spring (OSIS) in Paris
 - In 2021, Member of Comité de perfectionnement du master d'informatique d'Institut Polytechnique de Paris
 - Since 2020, member of the ASF board, the french chapter of ACM Sigops
 - Since 2021, member of Comité national du CNSR (CNRS research evaluation, junior and senior researcher hiring, etc.)
 - Reviewer of one HDR
 - Reviewer of 3 Ph.D. thesis
 - Jury member of 6 Ph.D. thesis
 - In 2022, I co-organized the Lyon Unikraft Hackathon
 - In 2020, I co-organized Les journées Cloud et Virtualization in Lyon
 - In 2019, I co-organized SIF Ph.D. student day in Nice
 - Three of my Ph.D. students won the CNRS Networks and Distributed Systems Research Group (GDR RSD) thesis wards (2018, 2019 and 2021)
 - Under my supervision, my Ph.D. student Stella Bitchebe won: Loreal-UNESCO awards for women in science, Generation Google Scholar (Europe), Microsoft Research Fellow, NEC Laboratory Fellow.

Patent FR1651891 (french patent). Co-inventor of the *Zombie* technology for server standby, thus better energy consumption in datacenters. *Zombie* because the machine is *on standby* (therefore "*dead*"), but its *memory* can be used remotely (therefore "*alive*").

Project participation. I have participated as partner/leader to 8 national projects (for a total amount of 1.204M) since I have been permanent. Departmental grants have funded most of my Ph.D. students, given the excellent candidates I have often presented.

Industrial transfer.

- I was co-principal investigator of several pre-maturation projects with Toulouse Tech Transfer. I can cite *Zombie* (datacenter disaggregation, with patent), *KelCloud* (automatic cloud selector), *IMAD* (fake app detection on Android), *HyperTP* (hypervisor transplantation for vulnerability window reduction).
- I co-supervised Bacou's CIFRE Ph.D. thesis with Atos. I am currently co-supervising Nguetchouang's CIFRE Ph.D. with Outscale. I will start another CIFRE Ph.D. with Orange labs in February. In Peterson Yuhala's Ph.D. thesis that I unofficially co-supervised in Switzerland, we closely work with Oracle Zurich (security improvement of their Java virtual machine called GraalVM).
- I co-supervised three interns who were located at the industry side: Outscale, OFTY, and INOVA.
- I was partner or principal investigator of several projects that involve people from industry. I can cite ANR Scalevisor (with Outscale and Virtual Open Systems) and ANR PicNic (which involves Nutanix).
- Since February 2022, I am working with UPMEM to virtualize their Processing In Memory technology.
- I am co-author of Roboconf, a cloud orchestrator we transferred to Linagora company.
- All my research contributions lead to prototyping. The latter is most of the time done in popular open source software such as Xen virtualization system, KVM virtualization system, and Linux.

Supervision. I am currently supervising 6 Ph.D. students (5 at 50% and 1 at 100%). Five over seven of my former Ph.D. students have obtained a permanent position in academic in France (4) and Vietnam (1).

Administrative tasks

- Since 2022, I am co-responsible for international relations at LIG
- Since 2022, I am member of the keynote speaker organizer group at LIG
- Since 2021, member of Comité national du CNRS (CNRS research evaluation, junior and senior researcher hiring, etc.)
- 2020-2022, I was co-head of Systèmes, Réseaux et Télécommunication research topic in FIL (Fédération Informatique Lyonnaise). I organized a lot of talks, open to the entire french System community. I invited several speakers, including David D. Patterson, Turing Awards 2017.
- Since 2020, I am co-head of Cloud and Virtualization research topic in GDR RSD
- Since 2020, I am member of the United Nation Roundtable 3C on AI
- 2020-2022, I was co-head of the working group on gender in LIP
- Since 2018, I am member of the steering committee member of ASF, the french chapter of ACM Sigops
- In 2019, I was member of the mentoring board at EuroSys
- 2016-2018, I was member of the IRIT council

International collaborations. I have been collaborating with several research groups out of France. The main countries are UK, USA, Cameroon, and Switzerland. Each collaboration has led to publications, see my publications RAID'22, ATC'20, SIGMETRICS'19, IPDPS'19, EuroSys'18, VEE'17, etc. I am officially co-supervising one Ph.D. thesis with Pierre Olivier (University of Manchester).

Teaching.

- 2021-2022, Director of the ENS Lyon computer science department
- 2020-2021, Deputy Director of the ENS Lyon computer science department
- I realize more than 250 hours eq. TD every year (in France and Cameroon)
- I built several teaching materials (labs and lectures) during my career (virtualization and cloud, big data infrastructures, operating systems, networks, performance evaluation)
- Since 2015, I am invited Professor at Ecole Nationale Polytechnique de Yaoundé, which is the best university in Cameroon. I teach about 50h eq. TD every year. I am in charge of the Virtualization and Cloud Computing lecture
- I have formalized the collaboration between Ecole Nationale Polytechnique de Yaoundé and INP Toulouse
- 2016-2018, I was CEVE member at ENSEEIHT
- 2017-2018, I was ENSEEIHT student coaching for international programming competitions (e.g., google hash code)
- 2017-2018, I was co-builder of the ASR (Architecture Systèmes Réseaux) curriculum in ENSEEIHT

Publications

Notice that in my research field (Systems), conferences are more reputable and more difficult to access than journals. I present here only my publications accepted in refereed conferences and journals, appearing in the Australian ranking (<http://portal.core.edu.au/conf-ranks/>). The latter ranks venues from the most reputable to the least reputable, according to A*, A, B and C ratings. Since my recruitment as a permanent staff member in 2013, I have decided to focus on conferences and journals ranked at least A. In other words, I opted for quality instead of quantity.

Side note. *As one can see below, Daniel Hagimont is co-author of about 50% of the presented publications. Daniel was my Ph.D. supervisor. We then worked as colleagues within the same group (2 permanents) when I was recruited Assistant Professor at INP Toulouse. One may think that this is an issue. The purpose of this paragraph is to assess that I am autonomous. First of all, my publication list shows that the remaining 50% of my publications do not involve Daniel. Second, almost all the international collaborators who are involved in my publication list were initiated by me. Third, I was the principal investigator of the majority of the publications which involve Daniel. Third, the geographical mobilities I realized without impact on my productivity show that I am autonomous. To simply say things, my collaboration with Daniel does not prevent me collaborating with other researchers. My outreach presented above is a proof that my research community recognizes my contributions.*

International conferences

1. Stella Bitchebe and **Alain Tchana**. *Out of Hypervisor (OoH): Efficient Dirty Page Tracking In Userspace Using Hardware Virtualization Features*. **SC 2022. Rank A***.
2. **Alain Tchana**, Lavoisier Lavoisier Wapet, Yérom-David Bromberg. *Odile: A scalable tracing tool for non-rooted and on-device Android phones*. **RAID 2022. Rank A**.

3. Anne Josiane Kouam, Aline Carneiro Viana, and **Alain Tchana**. *On the intricacies of per individual cellular network datasets generation*. NetSciX 2023. Poster presentation.
4. Anne Josiane Kouam, Aline Carneiro Viana, and **Alain Tchana**. *Simulating SIMBox frauds for detection investigation*. CoNEXT Student Workshop 2022, Roma, Italy.
5. Peterson Yuhala, Jämes Ménétrey, Pascal Felber, Valerio Schiavoni, **Alain Tchana**, Gaël Thomas, Hugo Guiroux, and Jean-Pierre Lozi. *Montsalvat: Intel SGX Shielding for GraalVM Native Images*. **Middleware 2021. Rank A.**
6. Djob Mvondo, Antonio Barbalace, **Alain Tchana**, Gilles Muller. *Tell me when you are sleepy and what may wake you up! (short paper)* **SoCC 2021. Rank A.**
7. Dinh Ngoc Tu, Boris Teabe, **Alain Tchana**, Gilles Muller, and Daniel Hagimont. *Mitigating vulnerability windows with hypervisor transplant*. **EuroSys 2021. Rank A.**
8. Peterson Yuhala, Pascal Felber, Valerio Schiavoni, and **Alain Tchana**. *Plinius: Secure and Persistent Machine Learning Model Training*. **DSN 2021. Rank A.**
9. Stella Bitchebe, Djob Mvondo, Laurent Réveillère, Noël De Palma, and **Alain Tchana**. *Extending Intel PML for Hardware-Assisted Working Set Size Estimation of VMs*. **VEE 2021. Rank A.**
10. Boris Teabe, Peterson Yuhala, **Alain Tchana**, Fabien Hermenier, Daniel Hagimont, Gilles Muller. *(No)Compromis: Paging virtualization is not a fatality*. **VEE 2021. Rank A.**
11. Djob Mvondo, Mathieu Bacou, Kevin Nguetchouang, Lucien Ngale, Stephane Pouget, Josiane Kouam, Renaud Lachaize, Jinho Hwang, Tim Wood, Daniel Hagimont, Noël De Palma, Batchakui bernabé, and **Alain Tchana**. *FaaSCache: an opportunistic free caching system for FaaS platforms*. **EuroSys 2021. Rank A.**
12. Djob Mvondo, **Alain Tchana**, Renaud Lachaize, Daniel Hagimont, Noel De Palma. *Fine-Grained Fault Tolerance For Resilient Virtual Machine Monitors*. **DSN 2020. Rang A.**
13. Y. Ren, G. Liu, V. Nitu, W. Shao, R. Kennedy, G. Parmer, T. Wood, **Alain Tchana**. *Fine-Grained Isolation for Scalable, Dynamic, Multi-tenant Edge Clouds*. **Userenix ATC 2020. Rang A.**
14. Kevin Jiokeng, Gentian Jakllari, **Alain Tchana**, André-Luc Beylot. *When FTM Discovered MUSIC: Accurate WiFi-based Ranging in the Presence of Multipat*. **INFOCOM 2020. Rang A***.
15. Mathieu Bacou, **Alain Tchana**, Daniel Hagimont, Baptiste Lepers, and Willy Zwaenepoel. *Drowsy-DC: Data center power management system*. **IPDPS 2019. Rang A.**
16. Tu Dinh Ngoc, Bao Bui, Stella Bitchebe, **Alain Tchana**, Valerio Schiavoni, Pascal Felber, and Daniel Hagimont. *Everything you should know about Intel SGX performance on virtualized systems*. **SIGMETRICS 2019. Rang A***.
17. Djob Mvondo, Boris Teabe, **Alain Tchana**, Daniel Hagimont, and Noel De Palma. *Memory flipping: a threat to NUMA virtual machines in the Cloud*. **INFOCOM 2019. Rang A***.
18. Bao Bui, Djob Mvondo, Boris Teabe, Lavoisier Wapet, Kevin Jiokeng, **Alain Tchana**, Gael Thomas, Gilles Muller, Daniel Hagimont, and Noel De Palma. *When eXtended Para-Virtualization (XPV) meet NUMA*. **EuroSys 2019. Rang A.**
19. Mathieu Bacou, **Alain Tchana**, and Daniel Hagimont. *Your Containers should be WYSIWYG*. **SCC 2019. Rang A.**
20. Vlad Nitu, Aram Kocharyan, Hannas Yaya, **Alain Tchana**, Daniel Hagimont, and Hrachya Astsatryan. *Working set size estimation techniques in virtualized environments: One size does not fit all*. **SIGMETRICS 2018. Rang A***.
21. Vlad Nitu, Boris Teabe, **Alain Tchana**, Canturk Isci and Daniel Hagimont. *Welcome to Zombieland*. **EuroSys 2018. Rang A.**
22. Boris Teabe, Lavoisier Wapet, Vlad Nitu, {Alain Tchana} and Daniel Hagimont. *Dealing with performance unpredictability in Asymmetric Multicore Processor cloud*. **Euro-Par 2017. Rang A.**
23. Vlad Nitu, Pierre Olivier, **Alain Tchana**, Daniel Chiba, Antonio Barbalace, Daniel Hagimont, and Binoy Ravindran. *Swift Birth and Quick Death: Enabling Fast Parallel Guest Boot and Destruction in the Xen Hypervisor*. **VEE 2017. Rang A.**
24. Boris Teabe, Vlad Nitu, **Alain Tchana**, and Daniel Hagimont. *The lock holder and the lock waiter pre-emption problems: nip them in the bud using informed spinlocks (I-Spinlocks)*. **EuroSys 2017. Rang A.**
25. Vlad Nitu, Boris Teabe, Leon Fopa, Alain Tchana and Daniel Hagimont. *StopGap: Elastic VMs to enhance server consolidation*. SAC 2017. Rang B.
26. **Alain Tchana**, Bao Bui, Boris Teabe, Vlad Nitu, and Daniel Hagimont. *Mitigating performance unpredictability in the IaaS using the Kyoto principle*. **Middleware 2016. Rang A.**
27. Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Application-specific quantum for multi-core platform scheduler*. **EuroSys 2016. Rang A.**
28. Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Billing system CPU time on individual VM*. **CCGrid 2016. Rang A.**
29. Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Mitigating Performance Unpredictability in Heterogeneous Clouds*. **SCC 2016. Rang A.**

30. Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Billing the CPU Time Used by System Components on Behalf of VMs*. **SCC 2016. Rang A.**
31. Giang Son Tran, **Alain Tchana**, and Daniel Hagimont, Noel De Palma. *Cooperative Resource Management in a IaaS*. AINA 2015. Rang B.
32. **Alain Tchana**, Noel de Palma, Ibrahim Safieddine, and Daniel Hagimont. *Software consolidation as an efficient energy and cost saving solution for a SaaS/PaaS cloud model in a IaaS*. **Euro-Par 2015. Rang A.**
33. Giang Tran, **Alain Tchana**, Brice Ekane, Boris Teabe, and Daniel Hagimont. *VMcSim: A Detailed Manycore Simulator for Virtualized Systems*. CLOUD 2015. Rang B.
34. Linh Manh Pham, **Alain Tchana**, Didier Donsez, Noel De Palma, Vincent Zurczak. and Pierre-Yves Gibello. *Roboconf: a Hybrid Cloud Orchestrator to Deploy Complex Applications*. CLOUD 2015. Rang B.
35. Giang Tran, **Alain Tchana**, Daniel Hagimont, and Noel De Palma. *Cooperative Resource Management in a IaaS*. AINA 2015. Rang B.
36. **Alain Tchana**, Bruno Dillenseger, Noel De Palma, Xavier Etchevers. Jean-Marc Vincent, Nabila Salmi, and Ahmed Harbaoui. *Self-scalable Benchmarking as a Service with Automatic Saturation Detection*. **Middleware 2013. Rang A.**
37. Daniel Hagimont, Christine Mayap, Laurent Broto, **Alain Tchana**, and Noel De Palma. *DVFS aware CPU credit enforcement in a virtualized*. **Middleware 2013. Rang A.**
38. Ahmed El Rheddane, Noel de Palma, Fabienne Boyer, Frédéric Dumont, Jean-Marc Menaud, and **Alain Tchana**. *Dynamic Scalability of a Consolidation Service*. CLOUD 2013. Rang B.
39. **Alain Tchana**, Noel Depalma, Ahmed El Rheddane, Bruno Dillenseger, and Xavier Etchevers. *A Scalable Benchmark as a Service Platform*. DAIS 2013. Rang B.

International journals

40. Josiane Kouam, Aline Carneiro, and Alain Tchana. *SIMBox bypass frauds in cellular networks: Strategies, evolution, detection, and future directions*. **IEEE Communications Surveys and Tutorials 2021. Rank A*.**
41. Gregoire Todeschi, Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Cacol: A zero overhead and non-intrusive double caching mitigation system*. **Future Generation Comp. Syst. 2020. Rang A.**
42. Lavoisier Wapet, **Alain Tchana**, Giang Son Tran, and Daniel Hagimont. *Preventing the propagation of a new kind of illegitimate apps*. **Future Generation Comp. Syst. 2019. Rang A.**
43. Vlad Nitu, Boris Teabe, Leon Fopa, **Alain Tchana** and Daniel Hagimont. *StopGap: Elastic VMs to enhance server consolidation*. **Software: Practice and Experience. 2017. Rang A.**
44. **Alain Tchana**, Noel De Palma, Ibrahim Safieddine, Daniel Hagimont. *Software consolidation as an efficient energy and cost saving solution*. **Future Generation Comp. Syst. 2016. Rang A.**
45. Boris Teabe, **Alain Tchana**, and Daniel Hagimont. *Enforcing CPU allocation in a heterogeneous IaaS*. **Future Generation Comp. Syst. 2015. Rang A.**
46. **Alain Tchana**, Noel De Palma, Bruno Dillenseger, and Xavier Etchevers. *A Self-Scalable Load Injection Service*. **Software Practice Experiments 2015. Rang A.**
47. **Alain Tchana**, Bruno Dillenseger, Noel De Palma, Xavier Etchevers. Jean-Marc Vincent, Nabila Salmi, and Ahmed Harbaoui. *A self-scalable benchmarking tool featuring self-regulated load injection and automatic saturation detection*. IEEE Transactions on Cloud Computing, 2014.
48. Gueye Mak kare Soguy, De Palma Noel, Rutten Eric, **Alain Tchana**, and Nicolas Berthier. *Coordinating self-sizing and self-repair Managers for Multi-tier Systems*. **Future Generation Comp. Syst. 2014. Rang A.**
49. Aeiman Gadafi, **Alain Tchana**, Daniel Hagimont, Laurent Broto, Remi Sharrock, and N. De Palma. *Energy-QoS Tradeoffs in J2EE Hosting Centers*. *International Journal of Autonomic computing, 2014.* Rang C.
50. **Alain Tchana**, Bruno Dillenseger, Noel De Palma, Xavier Etchevers, Jean-Marc Vincent, Nabila Salmi, and Ahmed Harbaoui. *A Self-Scalable and Auto-Regulated Request Injection Benchmarking Tool for Automatic Saturation Detection*. IEEE Transaction Cloud Computing, 2014.
51. Gueye Mak kare Soguy, De Palma Noel, Rutten Eric, and **Alain Tchana**. *Coordinating multiple administration loops using discrete control*. in Operating Systems Review 2013.
52. Gueye Mak kare Soguy, De Palma Noel, Rutten Eric, **Alain Tchana**, and Hagimont Daniel. *Discrete Control for Ensuring Consistency between Multiple Control Loops*. Journal of Cloud Computing: Advances, Systems and Applications, 2013.
53. **Alain Tchana**, Giang Son Tran, Laurent Broto, N. De Palma, and Daniel Hagimont. *Two levels autonomic resource management in virtualized IaaS*. **Future Generation Comp. Syst. 2013. Rang A.**