

Pierre-Louis Aublin

Ph.D. in Computer Science

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Experience

- May 2020 – **Visiting scientist**, *National Institute of Advanced Industrial Science and Technology (AIST)*, Tokyo, Japan.
- using **persistent memory** to improve the performance and robustness of distributed applications.
- April 2019 – **Project Assistant Professor**, *Keio University, Prof. Kono's laboratory*, Yokohama, Japan.
- improving the **security** of **cloud** applications using **secure enclaves** and **network accelerators**;
 - participating in CREST project “Prediction of dangers and anomalies in fully autonomous driving”;
 - improving the cheat resistance of online video-games by leveraging trusted execution;
 - supervising bachelor and master students.
- January 2016 – **Research Associate**, *Imperial College London, LSDS team*, London, UK.
- March 2019
- working on the **security** of **cloud** applications using **secure enclaves** as part of the European Sereca and SecureCloud projects;
 - **lead development** of TaLoS, a TLS library that allows existing applications **to securely terminate TLS connections** inside an **Intel SGX** enclave;
 - extending **Apache Spark** to protect the **confidentiality** of big data applications;
 - collaborating on the design and implementation of a security and performance **profiler** for Intel SGX;
 - **publications in top conferences**: Usenix ATC '17, EuroSys '18, DSN '18 and Middleware '18;
 - teaching C++ and operating systems at Imperial College London.
- September 2014 – **R&D Software Engineer**, *Alphanumeric Vision*, Orsay, France.
- January 2016
- performance optimization using **multicore** and **CUDA** programming;
 - programming on **embedded devices** (Android smartphones, Raspberry Pi and Beagle Board);
 - implementing unit tests (with GoogleTest framework) and regression tests.
- October 2013 – **Teaching and Research Assistant**, *INSA, LIRIS laboratory*, Lyon, France.
- August 2014
- collaborating with the Laboratory of Informatics at Grenoble on the design of **accountable peer-to-peer systems**. Published in SRDS 2014;
 - collaborating with the University of Milano on the design of a framework for the design of **rational resilient collaborative systems**;
 - giving lectures at INSA Lyon (Java and databases; 174 hours).
- October 2010 – **Ph.D. student**, *LIG laboratory*, Grenoble, France.
- Designing **efficient and robust Byzantine fault-tolerant replication protocols**
- January 2014
- designing, implementing and evaluating **a new Byzantine fault-tolerant replication protocol much more robust than the previous ones**. Published in ICDCS 2013;
 - collaborating with several French universities as part of the French Research Agency project Soceda;
 - collaborating on the implementation of a **very efficient and robust** Byzantine fault-tolerant replication protocol with the “École Polytechnique Fédérale de Lausanne”. Published in the ACM TOCS journal;
 - Linux kernel driver development for efficient communications on manycore machines;
 - giving lectures at Polytech Grenoble (Java, system programming and databases; 206 hours).

Awards

- 2018 **GPU Grant program**, *NVIDIA Corporation*.
- gift of a Titan Xp GPU from NVIDIA;
 - project: “secure machine learning processing”.
- 2012 **Parallel programming contest “Acceler8 your code”**, *Intel Corporation*.
- optimized and parallelized a reference algorithm solving the DNA Sequence Alignment problem;
 - finished 24/500, titled “Excellent software optimization skills”.

Education

- 2010–2014 **Ph.D. in Computer Science**, *Joseph Fourier University*, Grenoble, France.
- 2008–2010 **Master in Computer Science**, *Joseph Fourier University*, Grenoble, France.
- 2007–2010 **Magistère in Computer Science**, *Joseph Fourier University*, Grenoble, France, University award of excellence.

Publications

- December 2019 **secureTCP: Securing the TCP/IP stack using a Trusted Execution Environment**, *Information Processing Society of Japan System Software and Operating System conference (ComSys)*, Best young research award.
- June 2019 **Using Trusted Execution Environments for Secure Stream Processing of Medical Data**, *Proceedings of the 19th International Conference on Distributed Applications and Interoperable Systems (DAIS)*.
- December 2018 **sgx-perf: A Performance Analysis Tool for Intel SGX Enclaves**, *Proceedings of the 19th ACM/IFIP International Middleware Conference (Middleware)*, rank A.
- June 2018 **EndBox: Scalable Middlebox Functions Using Client-Side Trusted Execution**, *Proceedings of the 48th International Conference on Dependable Systems and Networks (DSN)*, rank A.
- June 2018 **Troxy: Transparent Access to Byzantine Fault-Tolerant Systems**, *Proceedings of the 48th International Conference on Dependable Systems and Networks (DSN)*, rank A.
- April 2018 **LibSEAL: Revealing Service Integrity Violations Using Trusted Execution**, *Proceedings of the ACM European Conference on Computer Systems (EuroSys)*, rank A.
- July 2017 **Glamdring: Automatic Application Partitioning for Intel SGX**, *Proceedings of USENIX Annual Technical Conference (ATC)*, rank A.
- March 2017 **TaLoS: Secure and Transparent TLS Termination inside SGX Enclaves**, *Research report, Imperial College London 2017/5*.
- January 2015 **The next 700 BFT protocols**, *ACM Transactions on Computer Systems*, rank A*.
- October 2014 **FullReview: Practical Accountability in Presence of Selfish Nodes**, *Proceedings of the International Symposium on Reliable Distributed Systems*, rank A.
- July 2013 **RBFT: Redundant Byzantine Fault Tolerance**, *Proceedings of the 33rd International Conference on Distributed Computing Systems*, rank A.
- April 2012 **REICoM: Robust and Efficient Inter-core Communications on Manycore Machines**, *Research report, INRIA Rhône-Alpes*.

Service

Journal reviewer.

- IEEE Transactions on Cloud Computing (2020);
- IEEE Transactions on Information Forensics & Security reviewer (2019);
- IEEE Transactions on Dependable and Secure Computing reviewer (2019).

Program Committees.

- Workshop on Scalable and Resilient Infrastructures for Distributed Ledgers (SERIAL '20);
- SRDS '20 conference;
- Workshop on Byzantine Consensus and Resilient Blockchains (BCRB '18).

Shadow Program Committees.

- Eurosys '17 and Eurosys '18.