

Bastien Confais

Ph.D. in Computer Science

About

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Education

2018	Ph.D Computer Science <i>Supervisors: Dr. Benoît Parrein and Dr. Adrien Lebre</i>	LS2N, University of Nantes, France
2015	Master's degree major in Computer Science	School of Engineering of the University of Nantes, France
2012	Two-year university degree Computer Science	University Institute of Technology of Nantes, France
2010	French Baccalauréat	Lycée Saint Dominique, Saint-Herblain, France

Work Experiences

- 11/18-10/19 **Researcher, CNRS (French National Center for Scientific Research)**
Continuation of the research project started during my Ph.D. about designing a distributed storage solution for Fog/Edge environments:
- Proposed a conjecture about properties a Fog storage system could meet;
 - Started a collaboration with an international researcher in order to prove the conjecture I proposed.
- Also contributed to the software programs developed in the laboratory, and more specifically the *Pilgrim* library dedicated to the creation of Bayesian networks and the *Choco* library designed to solve problems using integer linear programming.
- Created a python interface for these programs and developed an API to use them in a SaaS mode;
 - Initiated a collaboration between the two research teams in order to use the linear programming solver to generate Bayesian networks.
- 10/15-10/18 **Ph.D. Student, CNRS (French National Center for Scientific Research)**
Thesis: "A sharing data system adapted to a Fog Computing environment"
- Established the state-of-the-art of the existing distributed storage solutions and the theoretical concepts they use;
 - Established an experimental protocol and evaluated how these solutions behave in Fog/Edge Computing environment;
 - Proposed several improvements to adapt them to the Fog/Edge Computing architecture;
 - Proposed a new network protocol to locate the data within the infrastructure;
 - Implemented these proposals and conducted an experimental evaluation on a large testbed involving servers and IoT devices.
- 03/15-07/15 **Embedded Software Engineer, Kiwatch, Orvault, France (~5 employees)**
Kiwatch is a company providing a security camera service over the Internet.
- Developed a piece of software embedded on the cameras to manage the video stream sent to the server of the company;
 - Took the initiative to propose to architecture the different pieces of software according to the state-of-the-art so that it improves the scalability, the security and the performance of the service provided by the company; The engineering team and the technical director agreed to work on some ideas that are still today running in production.

04/12–06/12 **Software developer, IBM (International Business Machines Corporation), Pornichet, France**

- Studied how possible it is to automatically generate the documentation for the **Rational Programming Patterns** software program;
- Developed a Java introspection module that explores the class of the **Rational Programming Patterns** software program and that generates an input for the documentation generator.
- Learned a lot technically but much more about the SCRUM agile development process and about how companies work.

Skills

Research

Have knowledge in the following fields:

- Cloud Fog/Edge/Mobile Edge Computing infrastructures
- IP protocol: Mobile IP, Locator/Identifier separation protocol (LISP)
- Wireless network protocols: Wifi,3GPP,Lora - I have a very little knowledge of the physical layer.
- Network management: Software-Defined Networking (SDN), Network Function Virtualisation (NFV)
- Distributed Routing Protocols: Distributed Hash-Table protocols, flooding approaches, gossip approaches
- Storage management: Content Distributed Networking protocols (CDN), Blockchain technologies
- Artificial intelligence: Bayesian networks, Neuronal networks, Reinforcement learning

Can establish a state-of-the-art and to find where to contribute;

Can make links between fields that are not obviously related;

Know how to write a research paper in collaboration with other researchers;

Able to prepare slideshows for conferences but some help is still required to present in front of people.

Languages

French : Mother tongue

English : scored 875 on TOEIC (Test of English for International Communication).

Teaching

Supervised two undergraduate student projects (School years: 2017-2018 and 2018-2019).

Helped students in the methodology to use to design a software program, answered their questions and evaluated the work they did.

Interests & Activities

Autism

Autistic individual, trying to raise awareness about this condition and to create a more accessible & inclusive society

Supported by AsIAM, the Ireland's national autism charity.

- Realised an awareness campaign on twitter (April 2018)
- Realised a campaign by sending letters to shops, public transport operators, cinemas, schools and companies to explain to them why it is important to be accessible to autistic people and what they can do about it (July-August 2018)
- Taught employers about autism at a job fair event (November 2018)
- Delivered speeches at Avignon University and at the AsIAM conference in front of 150 people (2019)
- Organised an event with the university of Avignon about the accessibility of higher education (February 2020)

Cooking

Pastry (croissants, cakes and biscuits)

Publications

Book chapters

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "A Fog storage software architecture for the Internet of Things". In: *Advances in Edge Computing: Massive Parallel Processing and Applications*. Advances in Parallel Computing 35. IOS Press, 2020, pp. 61–105. doi: 10.3233/APC200004. URL: <https://hal.archives-ouvertes.fr/hal-02496105>.

Scientific journals

CONFAIS, Bastien, Benoît PARREIN, and Adrien LEBRE. "Data Location Management Protocol for Object Stores in a Fog Computing Infrastructure". In: *IEEE Transactions on Network and Service Management* (July 2019), pp. 1–14. doi: 10.1109/TNSM.2019.2929823.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Performance Analysis of Object Store Systems in a Fog and Edge Computing Infrastructure". In: *Transactions on Large-Scale Data- and Knowledge-Centered Systems (TLDKS) XXXIII (Springer)* (Aug. 2017), pp. 40–79. doi: 10.1007/978-3-662-55696-2_2.

International conferences

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "A Tree-Based Approach to locate Object Replicas in a Fog Storage Infrastructure". In: *IEEE Global Communications Conference - GLOBECOM 2018*. IEEE GlobeCom 2018 Conference Proceedings. Abu Dhabi, United Arab Emirates, Dec. 2018. URL: <https://hal.archives-ouvertes.fr/hal-01946365>.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "An Object Store Service for a Fog/Edge Computing Infrastructure based on IPFS and Scale-out NAS". In: *1st IEEE International Conference on Fog and Edge Computing - ICFEC'2017*. Madrid, Espagne, May 2017. URL: <https://hal.archives-ouvertes.fr/hal-01483702>.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Performance Analysis of Object Store Systems in a Fog/Edge Computing Infrastructures". In: *IEEE International Conference on Cloud Computing, Technology and Science - CloudCom 2016*. Luxembourg, Luxembourg, Dec. 2016. URL: <https://hal.archives-ouvertes.fr/hal-01397686>.

CONFAIS, Bastien, Alexandre VAN KEMPEN, Sylvain DAVID, Benoît PARREIN, and Marie-Pierre NACHOUKI. "Distributed Filesystems comparison on the GRID'5000 cluster". In: *Third Sino-French Workshop on Information and Communications Technology - SFWICT 2015*. Nantes, France, June 2015. URL: <https://hal.archives-ouvertes.fr/hal-01150757>.

National conferences

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Improving locality of an object store working in a Fog environment". In: *1ère école Grid'5000-FIT - G5K-FIT 2018*. Nice, France, Apr. 2018. URL: <https://hal.archives-ouvertes.fr/hal-01759998>.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "An object store for Fog infrastructures based on IPFS and a Scale-Out NAS". In: *École d'été journées thématiques (virtualisation dans les réseaux et le Cloud) - RESCOM 2017*. RESCOM 2017 École d'été, journées thématiques (virtualisation dans les réseaux et le Cloud). Le Croisic, France, June 2017, 2, (session poster). URL: <https://hal.archives-ouvertes.fr/hal-01559065>.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Quel système de stockage pour les architectures Fog ?" In: *Conférence d'informatique en Parallélisme, Architecture et Système - Compas 2016*. Lorient, France, July 2016. URL: <https://hal.archives-ouvertes.fr/hal-01376292>.

Other publications

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Adaptation of the Dijkstra's algorithm for metadata management in Fog Computing". In: *Journées non thématiques, RESCOM 2018*. Toulouse, France, Jan. 2018.

CONFAIS, Bastien. "Un système de stockage par objets pour les architectures Fog s'appuyant sur IPFS et un système de fichiers distribué de type Scale-Out NAS". In: *Journée des doctorants, ED STIM 2017*. Nantes, France, Apr. 2017.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Quel système de stockage distribué pour le Fog ?" In: *Journées Scientifiques de l'Université de Nantes 2016*. Nantes, France, June 2016.

CONFAIS, Bastien, Adrien LEBRE, and Benoît PARREIN. "Which storage system for FOG Computing? (conférence invitée)". In: *6th INRIA/Technicolor workshop on Big Data and Analytics - WOS 2016*. Rennes, France, Nov. 2016.

