

Allyx FONTAINE  
Merchant Venturers Building,  
Woodland Road, Clifton  
Bristol, BS8 1UB, United Kingdom

Phone: +44 7477 232 435  
Email: allyx.fontaine@gmail.com

## RESEARCHER IN COMPUTER SCIENCE

### FORMATION

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- 2010 - 2014      **PhD thesis in Computer Science**  
Subject: Analysis and formal proofs of randomised distributed algorithms  
Supervisors: Akka ZEMMARI and Pierre CASTÉLAN  
Reviewers: Dominique MÉRY and Vlady RAVELOMANANA  
Examiners: Jérémie CHALOPIN and Mohamed MOSBAH  
*LaBRI, Université de Bordeaux, France*
- 2009 - 2010      **5 year Diploma of Research specialising in Algorithms and Formal Methods**  
with distinction  
*Université Bordeaux 1, France*
- 2007 - 2010      **5 year Diploma of Engineering in higher education specialising in Computer Science**  
Valedictorian  
*ENSEIRB, Bordeaux Graduate School of Engineering, France*

### WORK EXPERIENCES

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- 2014 - now      **Post-doctorate in Algorithmic** (*University of Bristol, United Kingdom*)  
Keywords: Lower and upper bounds for time and space complexities, Deterministic and randomised algorithms, Streaming algorithm, Pattern matching
- 02/2010 - 07/2010      **Final year internship** (*LaBRI, Bordeaux, France*)  
Library to assist proofs about graph theory  
Tools : **Coq**, CoqIDE, Proof theory, Graph theory
- 06/2009 - 09/2009      **End-of-year internship** (*RedBite, Cambridge, United Kingdom*)  
RFID labelled Inventory Software  
Tools : **.NET**, Visual Studio, C#, Grails, PostgreSQL
- 12/2008 - 05/2009      **Final year project** (*ENSEIRB, Bordeaux, France*)  
Music searching software  
Tools : **Google Web Toolkit**, Eclipse, Tomcat, GlassFish, Java

### SKILLS

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|----------------------------|---|
| Languages                  | French : Native language<br>English : Advanced level (TOEIC : 790)<br>Spanish : Spoken and written well |
| Operating systems          | GNU/Linux, Windows  |
| Computer languages         | Coq, Caml, Lisp, C, C++, C#, Java   |
| Software                   | CoqIDE, Why, Frama-c, Tulip, Maple, Scilab, Eclipse, Visual Studio, Emacs, Latex, Word, Excel           |
| Database system management | Oracle, MySQL   |

## RESEARCH INTERESTS

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Themes            **Algorithms:** Complexity Analysis, Streaming Algorithm, Pattern Matching  
**Randomised Distributed Algorithms:** Model, Analysis, Proof  
**Formal Methods:** Proof Assistant Coq

## PUBLICATIONS & SOFTWARES

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### **A Fault-Tolerant Handshake Algorithm for Local Computations.**

Allyx Fontaine, Mohamed Mosbah, Mohamed Tounsi, Akka Zemmari.

*WAINA 2016 - IEEE 30th International Conference on Advanced Information Networking and Applications Workshops*, Switzerland, March 2016.

### **The $k$ -Mismatch Problem Revisited.**

Raphaël Clifford, Allyx Fontaine, Ely Porat, Benjamin Sach and Tatiana Starikovskaya.

*SODA 2016 - 27th Annual ACM-SIAM Symposium on Discrete Algorithms*, USA, January 2016.

### **Dictionary Matching in a Stream.**

Raphaël Clifford, Allyx Fontaine, Ely Porat, Benjamin Sach and Tatiana Starikovskaya.

*ESA 2015 - 23rd Annual European Symposium on Algorithms*, Greece, September 2015.

### **On Lower Bounds for the Time and the Bit Complexity of some Probabilistic Distributed Graph Algorithms.**

Allyx Fontaine, Yves Métivier, John Michael Robson and Akka Zemmari.

*SOFSEM 2014 - 40th International Conference on Current Trends in Theory and Practice of Computer Science*, Slovakia, January 2014.

### **Optimal Bit Complexity Randomised Distributed Maximal Independent Set and Maximal Matching Algorithms for Anonymous Rings.**

Allyx Fontaine, Yves Métivier, John Michael Robson and Akka Zemmari.

*Information and Computation*, 2013, <http://dx.doi.org/10.1016/j.ic.2013.10.005>.

### **Une Analyse Formelle en Coq d'un Algorithme Distribué Probabiliste résolvant le Problème du Rendez-Vous.**

Allyx Fontaine and Akka Zemmari.

*JFLA - Journées francophones des langages applicatifs*, France, February 2013.

### **Randomised Distributed Algorithms Library.** [www.labri.fr/perso/fontaine/RDA](http://www.labri.fr/perso/fontaine/RDA)

Coq library to reason about randomised distributed algorithms.

Allyx Fontaine and Akka Zemmari.

## TEACHING RESPONSIBILITIES

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2010 - 2014    **Engineering school: IPB, France, [www.enseirb-matmeca.fr/syllabus](http://www.enseirb-matmeca.fr/syllabus)**  
Unit "Algorithms and Data Structures", Electronics, 3 year degree  
Unit "Introduction to algorithmic", Computer Science, 3 year degree  
Unit "Tree Structures", Computer Science, 3 year degree  
Unit "Logic and Proof", Computer Science, 3 year degree  
Jury, "Viva for End Year Project", Computer Science, 4 year degree  
Unit "Database Systems", Computer Science, 4 year degree  
Lecture "Software Design - B Method", Computer Science, 5 year degree  
**French University Centre of Ho Chi Minh, Vietnam, [pufhcm.edu.vn](http://pufhcm.edu.vn)**  
Lecture "Parsing Analysis and programming project", Computer Science, 3 year degree

## OTHER

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Collective responsibilities    President of AFoDIB (Association for PhD students in computer science of Bordeaux) - 2011-2012  
Organiser of PhD seminars in LaBRI - 2010-2012  
Representative of non-permanent teacher at ENSEIRB - 2010-2012

Music                          Piano

Sport                          Judo