Takfarinas SABER

Personal Data

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Date of Birth:	April 20^{th}, 1991

Summary

I integrated the Natural Computing Research & Applications Group located at Michael Smurfit Graduate Business School, University College Dublin (UCD), Ireland as a **Post-Doctoral Researcher Fellow**.

I have a strong background in **Operations Research** and **performance optimisation** of algorithms. I love finding solutions to challenging engineering questions; people see me as **enthusiastic**, **focused** and **hard worker**.

My Post-Doctoral position is in close collaboration with **Bell Labs, Nokia and aims** at delivering the work programme outlined in the **Applications of Evolutionary Design** (App'ED) project. App'ED aims to bring us closer to automated design tools inspired by the natural world. The tools will be applied to optimise Future Networks & Communications such as 5G networks.

I obtained my Ph.D. in Computer Science from University College Dublin (UCD), Ireland. My Ph.D. topic is **Multi-objective Optimisation of Large-Scale Data Centres**: I applied multi-objective meta-heuristics to satisfy complex requirements of capital allocators.

I obtained both my **B.Sc.** in Computer Science and my **M.Sc.** in Computer Science, track: Optimisation In Operations Research in 2013 from the University of Nantes, France.

Work Experience

Now – Oct 2017 | Post-Doctoral Researcher Fellow
NCRA, UCD Michael Smurfit Graduate Business School, Ireland.
Delivering the work programme outlined in the Applications of Evolutionary Design (App'ED) project, in close collaboration with Bell Labs, Nokia. App'ED aims to bring us closer to automated design tools inspired by the natural world. The tools will be applied to optimise Future Networks & Communications such as 5G networks.

Nov 2017 | Guest Lecturer
NCRA, UCD Michael Smurfit Graduate Business School, Ireland.
Preparing and delivering lectures on Text Mining (2 x 1h30) as part of the Data Management module (MIS41060).

Nov 2017 | Guest Lecturer
NCRA, UCD Michael Smurfit Graduate Business School, Ireland.
Preparing and delivering lectures on Big Data (2 x 1h30) as part of the Data Management module (MIS41060): What is Big Data?, NoSQL, Map-Reduce, and Hadoop Ecosystem.

Sep 2017 – Jun 2013 | Teacher Assistant / Demonstrator
School of Computer Science, UCD, Ireland.
Planning and delivering a total of 721 hours of well-structured lab sessions which engage and motivate students. Preparing and implementing practical/assignments on the Moodle on-line checker. Correcting assignments and reporting.

Aug 2015 – Jun 2015 | Research Intern
Bell Labs, Alcatel-Lucent, Dublin, Ireland.
Modelling and optimising CPU interference in a virtualised environment using a Fluid Limit. Implementing a virtualised test-bed (using KVM-QEMU, and libvirt), and using Machine Learning techniques to infer parameters of the model and validate its accuracy.

Aug 2013 – Mar 2013 | Research Intern
Performance Engineering Laboratory, UCD, Ireland.
Optimising urban traffic using a novel prediction mechanism to detect congestion and to reroute vehicles. Publication at a CORE rank B conference (IEEE/ACM DS-RT 2014).

Jan 2013 – Apr 2010 | Debt Collector
General Electric Money Bank, Nantes, France.
Managing a portfolio of customers with late payments: contacting customers, study their solvency and putting a personalised debt collection plan (around 800 hours/year).

May 2012 – Jan 2012 | Research Intern
University of Nantes, France.
Worked on the Clustered, Capacitated, Vehicle Routing Problem (CCVRP) and extended a C++ library of heuristics and meta-heuristics (VRPH) to address it.

Aug 2011 – Apr 2011 | Work Placement
Ovialis (French IT Company, Subsidiary of Proservia), Carquefou France.
Designing and implementing a JEE application for processing job application, based on a Service Oriented Architecture (SOA) using Eclipse Acceleo (model-driven code generator).

Mar 2011 – Sep 2010 | Research Intern
Laboratoire d'Informatique de Nantes-Atlantique (LINA), University of Nantes, France.
Worked on complexity analysis of the interval Newton method for the resolution of non-linear problems.

Volunteering Experience

Building / Administrating Clusters

Nov 2017 — Building and managing a scientific cluster for the NCRA Group.
Building a cluster of 15 machines from scratch. Putting in place the useful management tools: LDAP (centralised user logging), Network File Sharing, and Ganglia (performance monitoring).

Creating / Administrating Group Wiki Page

Nov 2017 — Creating and managing the Wiki page for the NCRA Group.
Installing a FOSWIKI website and configuring it to feed the need of the lab with an internal and an public part.

Supervision

Aug 2017 — Florian Delavernhe M.Sc. Internship in University College Dublin, Ireland.
Feb 2017 — Designing a hybrid algorithm for the Multi-objective Test Case Minimisation in Regression Testing. (1 conference paper)

Aug 2016 — David Brevet M.Sc. Internship in University College Dublin, Ireland.
Feb 2016 — Study of Multi-objective Features Selection for Evolving Software Product Lines. (1 conference paper and 1 journal paper)

Reviewing

Now — Conferences and Journals.
Sep 2013 — I review regularly for different conferences and journals in my different areas of expertise, such as: DSRT (2013, 2015 and 2016), PIMRC (2016), GC14 SAC (2014), Cloud Computing (2016 and 2017), MASCOTS (2015), IJAIT (2016), IET Software (2017 and 2018), and FGCS (2018).

Conference / Workshop Organisation

Aug 2013 — First Irish SUMO User Workshop (ISUW).
I participated in the organisation of the workshop.

Teaching

Sep 2015 — Coder Dojo of the Science Gallery at Trinity College Dublin.
Mar 2015 — Preparing and Mentoring scientific experiments in Charles Lebourg primary School (Nantes, France), which allow pupils to learn interesting science and technology facts in a funny way. (1 hour per week)

Mentoring

Jun 2009 — Charles Lebourg Primary School and LAMAP44, Nantes, France.
Jan 2009 — Introducing participants (10 to 18 years old) to the basics of programming using Python. And teaching children (10 to 12 years old) how to create and code their own interactive stories, games, and animations using the free programming language Scratch. (2hours per week)

Talks

Dec 2015	**Keynote:** Multi-Objective VM Reassignment For Large Scale Data Centres, The 1st International Workshop on Sustainable Data Centres and Cloud Computing (S3DC).

Awards

Apr 2018	**Best Paper Nomination:** at EuroGP 2018 for the "Multi-level grammar genetic programming for schedulingin heterogeneous networks".
Feb 2017	**Google Hash Code:** Best score in Ireland at the extended round of the Google HashCode, with the design of an algorithm to optimise the placement of videos on cache servers in order to reduce the overall endpoint request latency.
Nov 2015	**Blockchain Hackathon:** 3^{rd} prize (1000) at the 1^{st} edition of Chainhack: The biggest Blockchain Hackathon in Europe with a project called "Open Charity", a safe, decentralized system allowing to issue IOUs ("I Owe You" tokens) for the benefit of Charity.

Education

Aug 2017	**Ph.D.** in Computer Science, University College Dublin, Ireland. Title: "Multi-objective Virtual Machine Reassignment for Large Scale Data Centres." – Supervisors: Prof. Liam Murphy & Dr Anthony Ventresque.
Aug 2013	**M.Sc.** in Computer Science, track: Optimisation in Operations Research, University of Nantes, France.
Aug 2011	**B.Sc.** in Computer Science, University of Nantes, France.

Languages

English:	Fluent
French:	Fluent
Arabic:	Fluent
Berber:	Mothertongue

Publications

Journals

1. Takfarinas Saber, James Thorburn, Murphy Liam, and Anthony Ventresque. Vm reassignment in hybrid clouds for large decentralised companies: a multi-objective challenge. *Future Generation Computer Systems, special issue on: Recent Trends in Cloud Computing*, 2018
2. Takfarinas Saber, David Brevet, Goetz Botterweck, and Anthony Ventresque. Is seeding a good strategy in multi-objective feature selection when feature models evolve? *Information and Software Technology*, 2017
3. Takfarinas Saber, Joao Marques-Silva, James Thorburn, and Anthony Ventresque. Exact and hybrid solutions for the multi-objective vm reassignment problem. *International Journal on Artificial Intelligence Tools*, 2017

Conferences / Workshops

1. Takfarinas Saber, Florian Delavernhe, Mike Papadakis, Michael O'Neill, and Anthony Ventresque. A hybrid algorithm for multi-objective test case selection. In *IEEE Congress on Evolutionary Computation*. IEEE, 2018
2. **Best Paper Nomination:** Takfarinas Saber, David Fagan, David Lynch, Stepan Kucera, Holger Claussen, and Michael ONeill. Multi-level grammar genetic programming for scheduling in heterogeneous networks. In *European Conference on Genetic Programming*, pages 118–134. Springer, 2018
3. David Brevet, Takfarinas Saber, Goetz Botterweck, and Anthony Ventresque. Preliminary study of multi-objective features selection for evolving software product lines. In *International Symposium on Search Based Software Engineering*, pages 274–280. Springer, 2016
4. Takfarinas Saber, Anthony Ventresque, Joao Marques-Silva, James Thorburn, and Liam Murphy. Milp for the multi-objective vm reassignment problem. In *Tools with Artificial Intelligence (ICTAI), 2015 IEEE 27th International Conference on*, pages 41–48, 2015
5. Takfarinas Saber, Anthony Ventresque, Ivona Brandic, James Thorburn, and Liam Murphy. Towards a multi-objective vm reassignment for large decentralised data centres. In *Utility and Cloud Computing (UCC), 2015 IEEE/ACM 8th International Conference on*, 2015
6. Takfarinas Saber, Anthony Ventresque, Liam Murphy, and El-Ghazali Talbi. Multi-objective vm reassignment for the enterprise. In *Meta*, 2014
7. Takfarinas Saber, Anthony Ventresque, Xavier Gandibleux, and Liam Murphy. Genepi: A multi-objective machine reassignment algorithm for data centres. In *Hybrid Metaheuristics (HM), 2014 9th International Workshop*, pages 115–129, 2014
8. Takfarinas Saber, Anthony Ventresque, and John Murphy. Rothar: Real-time on-line traffic assignment with load estimation. In *Distributed Simulation and Real Time Applications (DS-RT), 2013 IEEE/ACM 17th International Symposium on*, pages 79–86. IEEE, 2013

Skills

Operations Research

- **Modelling and resolving mono- and multi-objectives linear problems:** using linear solvers.
- **Large scale optimisation:** relaxation, column generation, cuts, surrogate constraints, heuristics and adapted meta-heuristics (e.g., Genetic Programming, Genetic Algorithm, Local Search, Ant Colony, etc.).
- **Blackbox and non-linear problems optimisation.**

Data Analysis:

- **Machine Learning, Data Mining and Data Analytics:** using R and Weka.
- **Big Data:** Hadoop.

Data Centres / Clusters

- **Creating and controlling private clouds:** using OpenStack/DevStack.
- **Virtualisation solutions:** KVM, VirtualBox and Linux Containers. item **Job queuing:** Torque.
- **Performance monitoring:** Ganglia.
- **User Management:** LDAP.
- **File Sharing:** NFS.

Other Skills

- **Data structures**, **Graphs** and algorithms **Complexity Analysis**.
- **Multi-Agent Systems:** JAVA Agent Development Framework (JADE).
- **Networks:** LAN, WAN, NS-3 Simulation, Emulation and Taps.
- **Parallel and Distributed Systems:** Apache Hadoop and Map-Reduce.
- **Databases:** MySQL, and MongoDB.
- **Programming and scripting languages:** C, C++, Python, Bash, Latex, Java, JEE and PHP.
- **Graphical User Interfaces:** SDL, Qt and JSP.
- **Websites and Wikis:** FOSWIKI.
- **IDEs:** Eclipse, PyCharm and Code::Blocks.
- **OSes:** Windows, Linux and Mac.

Interests and Activities

I am an amateur handball and football player, and love playing chess whenever I have time.