

Malika BENDECHACHE

PERSONAL DATA

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SUMMARY

I am currently working as a Post-Doctoral researcher at the Irish Centre for Cloud Computing and Commerce (IC4), School of Business, Dublin City University (DCU). IC4 focuses its research efforts on both the development of breakthrough Cloud applications as well as evidence-based evaluation of their commercial value. My work is in the areas of Cloud Computing (simulation of large-scale Cloud and Edge/Fog- Computing environments) and Data Analytics for Finance. My duties include delivering the work outlined in the RECAP Horizon 2020 project in collaboration with various European academic and industrial partners, publishing high quality research at high impact venues, supervising Master students and currying admin duties.

Previously, I have occupied the position of Post-Doctoral Researcher at the CONSUS research centre, School of Computer Science, University College Dublin (UCD) in collaboration with Origin Enterprises PLC. I applied Machine Learning techniques on real agriculture sensor data to improve sustainable crop production and management techniques, which will lead to a more efficient food production with a lower environmental impact.

I obtained my PhD in Computer Science within 3 years at Insight Centre for Data Analytics, UCD. I have a strong background in Data Mining, Machine Learning, Big Data Analysis, Cloud Computing, Distributed Systems and Multi-agent Systems. My PhD topic is 'Study of Distributed Dynamic Clustering Framework for Spatial Data Mining': I proposed and developed a new distributed Data Mining framework to analyse Big Data and produce accurate results within reasonable response times.

WORK EXPERIENCE

OCT 2018 NOW	Post-Doctoral Researcher <i>Irish Centre for Cloud Computing and Commerce (IC4), DCU, Ireland</i> Design, development and simulation of breakthrough Cloud and Edge-/Fog- Computing technology applications.
SEP 2018 NOW	Part-time Lecturer at CCT <i>CCT College Dublin, Ireland</i> Design and Deliver the undergrad module: Fundamentals of Statistics for Data Analytics. Tutor 3 rd year students in the School of Computing.
SEP 2018 NOW	Programme Developer <i>CCT College Dublin, Ireland</i> Programme development of four diplomas (i.e., MSc in Science, Diploma in Data Analytics for Business, Diploma in Artificial Intelligence, Diploma in Applied Software Development, and Diploma in Networking & Systems Security). All programmes obtained the QQI Irish state accreditation.
JUN 2019 AUG 2019	Supervising Two MSc students during their internships <i>Irish Centre for Cloud Computing and Commerce (IC4), DCU, Ireland</i> Comparing the two implementations of a Parallel DBSCAN using Map-Reduce and Spark. Modeling and simulation of ElasticSearch using CloudSim.
JAN 2018 JUL 2018	Post-Doctoral Researcher <i>CONSUS Research Centre, UCD, Ireland</i> Applying machine learning techniques to improve sustainable crop production and management techniques, optimising crop production efficiency, which will lead to a more efficient food production with a lower environmental impact.
FEB 2018 JUN 2018	Supervising Two Erasmus MSc students during their internships <i>Insight Centre for Data Analytics, UCD, Ireland</i> Parallel Distributed Ensemble-Based Classification Using Map-Reduce. Parallel extraction of Regions-of-Interest from social media data.
JUN 2017 AUG 2017	Mentoring a MSc student during his internship <i>Insight Centre for Data Analytics, UCD, Ireland</i> Implementing a distributed clustering algorithm using MapReduce.
JAN 2015 JUL 2017	Teacher Assistant and Demonstration <i>UCD, Ireland</i> Planning and delivering well-structured lab sessions which engage and motivate students in Cloud Computing (MSc), Data Mining (MSc), Java (3 rd year) and Information Theory (2 nd year).
JAN 2015 JUL 2017	Tutor and IT Support <i>UCD, Ireland</i> Providing an academic support to Computer Science students and helping them with course materials that they struggle to understand.
SEP 2012 JAN 2014	Research Internship <i>Erasmus Mundus, Averroes scholarship, Waterford Institute of Technology (WIT), Ireland</i> Application of data mining techniques on distributed intelligent systems.
JAN 2013 MAR 2013	Research Internship <i>General and Parallel Computational Research Group (PCRG), UCD, Ireland</i> Modelling of a distributed intelligent system as a multi-objective optimisation problem for solving the problem of distributed data mining.
NOV 2008 MAR 2009	Work Placement <i>Corps Gras de Bejaia (CO.G.B.Belle), Algeria</i> Designing and developing an advertisement website for the company.
MAR 2008 MAY 2008	Internship <i>Vice-Rectorate for the Promotion of Scientific Research and External Relations, University of A-Mira of Bejaia, Algeria</i> Designing and developing a web application for management of research projects.

EDUCATION

- JANUARY 2018 PhD in COMPUTER SCIENCE, **University College Dublin**, Ireland.
Title: "Study of Distributed Dynamic Clustering Framework for Spatial Data Mining".
- JANUARY 2014 Researcher in DATA MINING and DISTRIBUTED SYSTEM.
Waterford Institute of Technology (WIT), Waterford, Ireland.
Scholarship of 18 months.
Subject: Data Mining Techniques and Distributed Intelligent Systems.
- JULY 2010 MSc in NETWORKS AND DISTRIBUTED SYSTEMS (RANKING: 1st/192).
University A-Mira of Bejaia, Algeria.
Thesis: " Performance Evaluation of peer-to-peer Networks".
- JULY 2008 BSc in COMPUTER SCIENCE (RANKING: 3rd/250).
University A-Mira of Bejaia, Algeria.

ACTIVITIES AND HONOURS

HONOURS

- JULY 2019 **3rd Place** in Challenge-Up-2019 competition: Multi-modal Fall Detection for Healthcare.
- JULY 2015 **Best paper** at International Conference on Spatial Data Mining (ICSDM-2015).
Paper Title: Distributed Clustering Algorithm For Spatial Data Mining.

ACTIVITIES

- JULY 2016 Mentoring BT Young Scientist Business Bootcamp working on the commercial and social development of their projects at NovaUCD.
- JUNE 2016 Participating in the Insight hackathon for data science.
- MARCH 2016 Mentoring and encouraging teenage girls and their parents in Girl-shHackIreland event to consider careers in STEM (Science, Technology, Engineering and Maths).

SKILLS

Parallel and Distributed System:

- **Multi-Agent Systems:** JAVA Agent Development Framework (JADE).
- **Apache Hadoop and MapReduce.**
- **Cloud Services:** Amazon (AWS, EC2 and S3) and Google (App Engine).
- **Simulation of Cloud, Edge/Fog and IoT:** simulation tools; CloudSim.
- **Peer-To-Peer Networks:** Gnutella, eMule, Torrent.

Data Analysis:

- **Data Preparation:** data cleaning, data profiling, pre-processing and data warehousing.
- **Machine Learning, Data Mining and Data Analytics:** Classifications, Prediction, Regression, Association, Clustering, etc.
- **Deep Learning:** TensorFlow.
- **Data Mining tools:** Weka and RapidMiner.
- Data Modelling and Evaluation.

- Big Data Management and Processing.

Various Skills:

- Data structures, Graphs and algorithms complexity analysis.
- **Programming and scripting languages:** HTML, Python, R, Bash, Java, Latex and PHP.
- **IDEs:** Eclipse, NetBeans, Code::Blocks and PyCharm.
- **OSes:** Windows, Linux and Mac.
- **Data Visualisation Tools:** Tableau, Gnuplot.
- **Databases:** MYSQL, MongoDB, and Cassandra.
- **Communication Networks:** LAN and WAN.
- **Mobile Development:** Kivy on Android.
- **Web Development:** Django.

LANGUAGES

BERBER: Mothertongue
ENGLISH: Fluent
FRENCH: Fluent
ARABIC: Fluent

INTERESTS AND ACTIVITIES

I am a big fan of Technology (VR, IoT, Drone, etc.). I also enjoy running, travelling and playing foosball.

PUBLICATIONS

Journals

1. Bendechange, Malika, Sergej Svorobej, Patricia Takako Endo, James Byrne, and Theo Lynn. Simulating resource management across the c2t continuum: A survey and future directions. *An International Journal of Simulation Modelling Practice and Theory*, 55, 2019 “Under Review”
2. Bendechange, Malika, Patricia Endo, Santos Guto, Leoni, Mark Cummins, and Theo Lynn. Crude oil price forecasting using a long short-term memory model. *Energy Economics Journal*, 59, 2019 “Under Review”
3. Bendechange, Malika and M-Tahar Kechadi. Application of data mining to precision agriculture. *An International Journal on Advances in Precision Agriculture*, 19, 2018 “Under Review”
4. Christos Filelis-Papadopoulos, Patricia Takako Endo, Bendechange, Malika, Sergej Svorobej, Konstantinos M Giannoutakis, George A. Gravvanis, Dimitrios Tzovaras, James Byrne, and Theo Lynn. Towards simulation and optimisation of cache placement on large virtual content distribution networks. *Journal of computational Scienc*, 55, 2019
5. Sergej Svorobej, Patricia Endo, Bendechange, Malika, Giannoutakis Christosand, Konstantinos M., A. Gravvanis George, Tzovaras Dimitrios, James Byrne, and Theo Lynn. Simulating fog and edge computing scenarios: An overview and research challenges. *An International Journal of Future Internet*, 11, 2019
6. Bendechange, Malika, Tari A-Kamel, and M-Tahar Kechadi. Parallel and distributed clustering framework for big spatial data mining. *International Journal of Parallel, Emergent and Distributed Systems*, 0(0):1–19, 2018

Conferences

1. Bendechange, Malika, Silva Ivanovitch, Santos Guto, Leoni, Guedes Luiz, Affonso, Sergej Svorobej, Mario Manuel, Noya, Ares M.Eduardo, James Byrne, Patricia Endo, and Theo Lynn. Analysing dependability and performance of a real-world elastic search application. In *9th Latin-American Symposium on Dependable computing (LADC)*. IEEE, 2019 “Accepted”
2. Bendechange, Malika, Sergej Svorobej, Patricia Endo, James Byrne, Mario Manuel, Noya, Ares M.Eduardo, and Theo Lynn. Modelling and simulation of elasticsearch using cloudsim. In *23rd International Symposium on Distributed Simulation and Real Time Applications (DS-RT-2019)*. IEEE, 2019
3. Bendechange, Malika, Nhien-An Le-Khac, and M-Tahar Kechadi. Performance evaluation of a distributed clustering approach for spatial datasets. In *15th International Conference on Australasian Data Mining Conference (AusDM)*. CRPIT, 2017
4. Bendechange, Malika, Nhien-An Le-Khac, and M-Tahar Kechadi. Hierarchical aggregation approach for distributed clustering of spatial datasets. In *16th International Conference on Data Mining Workshops (ICDMW)*, pages 1098–1103. IEEE, 2016
5. Bendechange, Malika, Nhien-An Le-Khac, and M-Tahar Kechadi. Efficient large scale clustering based on data partitioning. In *International Conference on Data Science and Advanced Analytics (DSAA)*, pages 612–621. IEEE, 2016
6. **Best Paper Award:** Bendechange, Malika and M-Tahar Kechadi. Distributed clustering algorithm for spatial data mining. In *2nd International Conference on Spatial Data Mining and Geographical Knowledge Services (ICSDM)*, pages 60–65. IEEE, 2015

Books / Book Chapters

1. Silvano Ramos de Assis Neto, Guto Leoni Santos, Elisson da Silva Rocha, Malika Bendechange, Pierangelo Rosati, Theo Lynn, and Patricia Takako Endo. Detecting human activities based on a multimodal sensor data set using a bidirectional long short-term memory model. In *Challenges and Trends in Multimodal Fall Detection for Healthcare*, chapter 4. Studies in Systems, Decision and Control, Springer, 2019. Part of the Challenge UP 2019: Multimodal Fall Detection competition “3rd place in Challenge Up competition”
2. Malika Bendechange, Sergej Svorobej, Minas Spanopoulos, Patricia Takako Endo, and Theo Lynn. Simulating across the cloud 2 thing continuum. In *RECAP Open Access Book*, chapter 6. Springer, 2019 “Submitted”

Posters

1. Bendechange, Malika and Kechadi Tahar. Distributed clustering as a new approach for big data analysis. In *Insight Student Conference-17*, 2017
2. Bendechange, Malika and Kechadi Tahar. Efficient large-scale clustering based on data partitioning. In *Insight Student Conference-16*, 2016

PEER REVIEWED PAPER

1. Ad-hoc edge cloud: A framework for dynamic creation of edge computing infrastructures. In *ICCCN 2019: 28th International Conference on Computer Communications and Networks*, 2019
2. Fuzzy k-prototype clustering with map reduce based privacy preserving high-order heterogeneous data. *Journal of Ambient Intelligence and Humanized Computing*, 2018