Mohamed Reda Bouadjenek – Ph.D, Lecturer (Assistant Professor)

Contact

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Interests

Information Retrieval, Biomedical Text Mining, Social Network Analysis, Machine Learning, Deep Learning, Recommender Systems, Databases, Data Quality, Data Analysis and Bioinformatics.

Citizenship

Algerian Citizen; French Citizen; Canadian Permanent Resident; Australian Permanent Resident.

Education

Ph.D in Computer Science, University of Paris-Saclay, Versailles, France. September 2009 to December 2013,

Title: *"Infrastructure and Algorithms for Information Retrieval Based On Social Network Analysis/Mining"*.

Supervisors: Mokrane Bouzeghoub and Hakim Hacid.

During my Ph.D. thesis, I have extended conventional Information Retrieval models in order to incorporate side social information. Specifically, I have introduced a novel ranking function, a new Information Retrieval modeling schema, and a query expansion algorithm all based on innovative social features. These contributions have been integrated into a social web search engine called LAICOS, which represented some of my major contributions to the area of Social Information Retrieval.

Master (by Research) in Computer Science, University of Paris-Saclay, Versailles, France. September 2008 to September 2009,

Area: Databases and Distributed Information Systems.

The objective of this master is to form specialists and researchers in IT systems with a strong background in databases, modeling of information systems, and systems architecture. The research performed in this domain also requires an applied nature. For this reason, this training provides, besides theoretical disciplines that are necessary to model and solve given problems, a number of courses that enable the student to grasp deeply the practical aspects of information systems.

Engineering degree in Computer Science at University of Sciences and Technology Houari Boumediene (USTHB), Algiers, Algeria. September 2003 to June 2008,

Area: Databases and Information Systems.

The objective of this training is to train engineers with a strong background in databases and information systems. The courses taught also aim to train engineers who are able to reason from the knowledge acquired and to implement it, making them immediately operational.

Professional Experience

Deakin University. November 2019 to Present,

Lecturer (Assistant Professor), Applied Artificial Intelligence.

I'm a Lecturer (Assistant Professor) of Applied Artificial Intelligence in the School of Information Technology at Deakin University, Australia.

University of Toronto[1]. November 2017 to October 2019,

Research Fellow. Supervisor: Scott Sanner.

I was a research fellow at the Department of Mechanical and Industrial Engineering in the University of Toronto. I worked on several research projects related to Information Retrieval for Adaptive User Interfaces, Social Network Analysis for topic learning, and Machine Learning with Social Media Analysis for Financial Analytics.

The University of Melbourne[2]. September 2015 to September 2017,

[1] https://www.mie.utoronto.ca/
[2] http://people.eng.unimelb.edu.au/

Research Fellow. Supervisor: Karin Verspoor and Justin Zobel.

I was a research fellow at the School of Computing and Information Systems at the University of Melbourne. I worked on a project related to data quality in biological sequence databases. Bioinformatics sequence databases such as Genbank or UnieProt contain hundreds of millions of records of genomic data. These records are derived from direct submissions from individual laboratories, as well as from bulk submissions from large-scale sequencing centers; their diversity and scale means that they suffer from a range of data quality issues including errors, discrepancies, redundancies, ambiguities, and incompleteness. In that context, I explored the detection of low-quality records by using the published literature to detect literature-inconsistent records.

Oregon State University, OSU[3]. July 2015 to August 2015,

Visiting Researcher. Supervisor: Scott Sanner.

During my research visit at OSU, I worked on a large-scale twitter data analysis project. Learning Topical Social Media Sensors for Twitter Built a flexible search tool for Twitter, capable of learning user's information needs from a small set of examples generalizing to broader related future content matching those information needs. This research involved designing novel paradigms for machine learning with social media through to the implementation of scalable Big Data frameworks leveraging Apache Spark on the Amazon EC2 to analyze over 40 TB of Twitter data.

Institut National de Recherche en Informatique et en Automatique, INRIA. January 2014 to July 2015,

Postdoc Researcher. Supervisors: Esther Pacitti and Patrick Valduriez.

I was a Post-doctoral researcher in the ZENITH team[4], a joint team between the LIRMM laboratory[5] and INRIA - the French Institute for Research in Computer Science and Automation. I worked in the context of the Inria@SiliconValley program[6], in collaboration with the Distributed Systems Lab at UCSB[7]. I was responsible in exploring and developing new methods to improve recommender systems through the use of different datasources in a distributed context, i.e. these datasources are distributed and geographically distant from each other.

University of California Santa Barbara, UCSB. November 2014 to December 2014,

Visiting Researcher. Supervisor: Amr El Abbadi.

During my research visit at the Distributed Systems Research Laboratory of UCSB, I worked on distributed recommender systems. More specifically, we investigated distributed online trend recommendation algorithms.

National ICT Australia, NICTA[8]. August 2013 to December 2013,

Visiting Researcher. Supervisor: Scott Sanner.

During my research visit at NICTA, I worked on a patent prior art search project. We carried out an intensive study of query reformulation for patent prior art search with partial patent applications, with the objective of assessing not only the performance of standard query reformulation methods, but also the effectiveness of query reformulation methods that exploit patent-specific characteristics.

Alcatel-Lucent Bell Labs, France. March 2010 to March 2013,

Research Engineer. Supervisor: Hakim Hacid.

I was a research engineer at the department of Privacy Preserving Data Analytics and Management. I worked in the context of the SocialSensor[9] project which aims to develop a new framework for enabling real-time indexing and search in the Social Web. This project is strongly related to the topic of my Ph.D. In particular, I was involved in the Work Package 4, which concerns search and recommendation in the context of social networks and the web. It includes the crawling and indexing of social and web sources; the analysis of user queries; and the use of context (including social context) to refine and improve search.

[3] http://eecs.oregonstate.edu/
[4] https://team.inria.fr/zenith/
[5] http://www.lirmm.fr/
[6] http://project.inria.fr/siliconvalley/
[7] See the BigDataNet project: https://team.inria.fr/zenith/projects/international-projects/bigdatanet/
[8] http://www.nicta.com.au/research/machine_learning
[9] SocialSensor is an FP7 european project. http://www.socialsensor.eu/

My research within the team led to the development of *LAICOS,* a social Web search engine as a contribution to the growing area of Social Information Retrieval (SIR) *demo*nstrated at the demo track of KDD 2013.

LSIS[10] Laboratory, University of Aix-Marseille I, France. January 2010 to March 2010,
Student Internship. Supervisor: Omar Boucelma.

I participated to the QUADRIS[11] project on spatial data quality. During this internship, we adapted our previous QBox-Services platform to assess geographic data. Hence, we developed GQBox, a geographic quality (tool) box. GQBox supplies a standards-based generic meta model that supports the definition of quality goals and metrics, and it provides a service-based infrastructure that allows interoperability among several quality tools.

PRiSM[12] Laboratory, University of Versailles, France. April 2009 to September 2009,
Master Student Internship. Supervisor: Mokrane Bouzeghoub.
Dissertation: *"A Services Oriented Platform for Data Quality Assessment"*.

During this internship, I developed the QBox-Services, an evolution of the QBox-Foundation platform proposed in the context of the QUADRIS project. This platform supplies a service-based integration infrastructure that allows interoperability among several third part quality tools and provides an OLAP-based quality model to support multidimensional analysis.

Diomed, Distributor of medical solutions, Algeria. September 2007 to July 2008,
Student Internship.
Dissertation: "*Specification and Implementation of a Hospital Information System*".

The objective of this internship was to contribute to the development of an information system that allows to automate all the management of a hospital center. I contributed to the development of several parts of this information system using ASP.NET.

Patents

- S.Sanner and M. R. Bouadjenek. **Method for Ranking and Retrieving Items Using Multiple Filter Optimization**, 2018. Patent USXXXXXXX.
- M. R. Bouadjenek and H. Hacid. **Method for expanding user queries**, August 1 2012. Patent EP2482202.
- M. R. Bouadjenek and H. Hacid. **A Method and a Tool for social web search through documents representation and indexing enhancement,** October 16 2013. Patent EP2650801.
- M. R. Bouadjenek and H. Hacid. **Method And Apparatus For Document Representation Enhancement Via Social Information Integration In Information Retrieval Systems,** September 18, 2014. Patent US 2014/0280086.

Publications

Under review

- M. R. Bouadjenek, S. Sanner, and Y. Du. **Relevance- and Interface-driven Clustering for Visual Information Retrieval.** Submitted to Journal of Information Systems 2019.
- M. R. Bouadjenek, S. Sanner, Z. Iman, and L. Xie. **A Longitudinal Study of Topic Classification on Twitter.** Submitted to PeerJ Computer Science 2019.

Journal papers

- B. Zhang, S. Sanner, M. R. Bouadjenek, and S. Gupta. **Bayesian Networks for Data Integration in the Absence of Foreign Keys.** IEEE Transactions on Knowledge and Data Engineering, vol. 32, no. 4, pp. 803-808, 1 April. 2020. http://dx.doi.org/10.1109/TKDE.2019.2940019.
- S. Gupta, D. Ko, M.R Bouadjenek, S. Sanner, A. Chong, P. Austin, M. Koh. **Evaluation of Machine Learning Algorithms for Predicting Readmission after Acute Myocardial Infarction Using Routinely Collected Clinical Data Canadian Journal of Cardiology.** Journal of Canadian Journal of Cardiology. Volume XX, 2020, ISSN 0828-282X. https://doi.org/10.1016/j.cjca.2019.10.023.

[10] Laboratoire des Sciences de l'Information et des Systèmes. http://www.lsis.org/
[11] http://quadris.cnam.fr/xwiki/bin/view/QUADRIS/WebHome
[12] Parallèlisme, Réseaux, Systèmes et Modélisation. http://www.prism.uvsq.fr/

- M. R. Bouadjenek, J. Zobel, and K. Verspoor. **Automated Assessment of Biological Database Assertions Using the Scientific Literature.** BMC Bioinformatics 2019 20:216.
- M. R. Bouadjenek, H. Hacid, M. Bouzeghoub. **Personalized Social Query Expansion Using Social Annotations**. Transactions on Large-Scale Data- and Knowledge-Centered Systems XL. Lecture Notes in Computer Science, vol 11360, 2019. Springer, Berlin, Heidelberg. 1-25. https://doi.org/10.1007/978-3-662-58664-8_1.
- M. R. Bouadjenek and K. Verspoor. **Multi-Field Query Expansion is Effective for Biomedical Dataset Retrieval.** Database: The Journal of Biological Databases and Curation (Oxford) 2017, 2017 (1): bax062, https://doi.org/10.1093/database/bax062.
- M. R. Bouadjenek, K. Verspoor, and J. Zobel. **Automated Detection of Records in Biological Sequence Databases that are Inconsistent with the Literature.** Journal of Biomedical Informatics, July 2017, ISSN 1532-0464, https://doi.org/10.1016/j.jbi.2017.06.015.
- M. R. Bouadjenek, K. Verspoor, and J. Zobel. **Literature Consistency of Bioinformatics Sequence Databases is Effective for Assessing Record Quality.** Database (Oxford) 2017, 2017 (1): bax021, https://doi.org/10.1093/database/bax021.
- M. R. Bouadjenek, H. Hacid, M. Bouzeghoub, and A. Vakali. **PerSaDoR: Personalized Social Document Representation for Improving Web Search.** Journal of Information Sciences Volume 369, 10 November 2016, ISSN 0020-0255, http://dx.doi.org/10.1016/j.ins.2016.07.046.
- M. R. Bouadjenek, H. Hacid, M. Bouzeghoub. **Social Networks and Information Retrieval, How Are They Converging? A Survey, a Taxonomy and an Analysis of Social Information Retrieval Approaches and Platforms**. Journal of Information Systems Volume 56, March 2016, ISSN 0306-4379, http://dx.doi.org/10.1016/j.is.2015.07.008.
- F. Lemos, M. R. Bouadjenek, Z. Kedad, and M. Bouzeghoub. **Using the QBox Platform to Assess Quality in Data Integration Systems**. Journal d'Ingénierie des Systèmes d'Information, 2010, France: 105-124.

Conference papers

- G. Wu, M. R. Bouadjenek, and S. Sanner. **One-Class Collaborative Filtering with the Queryable Variational Autoencode.** The 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval, SIGIR 2019, Pages 921–924.
- Y. Wang, G. Wu, M. R. Bouadjenek, and S. Sanner. **A Novel Regularizer for Temporally Stable Learning with an Application to Twitter Topic Classification.** Accepted to the SIAM International Conference on Data Mining, SDM 2019.
- M. R. Bouadjenek, and S. Sanner. **Relevance-driven Clustering for Visual Information Retrieval on Twitter.** In Proceedings of the 4th ACM Conference on Human Information Interaction & Retrieval, CHIIR'19, pages 349-353, New York, NY, USA, 2019. ACM.
- M. R. Bouadjenek, E. Pacitti, F. Masseglia, and A. El Abbadi. **A Distributed Collaborative Filtering Algorithm Using Multiple Data Sources**. In Proceedings of the Tenth International Conference on Advances in Databases, Knowledge, and Data Applications 2018.
- M. R. Bouadjenek, K. Verspoor, J. Zobel. **Learning Biological Sequence Types Using the Literature.** In Proceedings of the 26th ACM Conference on Information and Knowledge Management, CIKM'17, pages 1991–1994, New York, NY, USA, 2017. ACM.
- Z. Iman, S. Sanner, M. R. Bouadjenek, and L. Xie. **A Longitudinal Study of Topic Classification on Twitter.** In the 11th International AAAI Conference on Web and Social Media (ICWSM 2017), pages 552-555, AAAI Press.
- M. Golestanfar, S. Sanner, M. R. Bouadjenek, G. Ferraro. **On Term Selection Techniques for Patent Prior-art Search.** In Proceedings of the 38th international ACM SIGIR conference on Research and development in information retrieval, SIGIR'15, pages 803-806, New York, NY, USA, 2015. ACM.
- M. R. Bouadjenek, S. Sanner, G. Ferraro. **A Study of Query Reformulation for Patent Prior Art Search with Partial Patent Applications.** In the Proceedings of the Fifteen International Conference on Artificial Intelligence and Law (ICAIL '15), pages 23-32. ACM, New York, NY, USA.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub. **LAICOS: An Open Source Platform for Personalized Social Web Search.** In the proceeding of the 19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), pages 1446-1449, New York, NY, USA, 2013. ACM.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub, and A. Vakali. **Using Social Annotations to Enhance Document Representation for Personalized Search.** In Proceedings of the 36th international ACM SIGIR conference on Research and development in information retrieval, SIGIR'13, pages 1049–1052, New York, NY, USA, 2013. ACM.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub. **SoPRa: A New Social Personalized Ranking Function for Improving Web Search.** In Proceedings of the 36th international ACM SIGIR conference on Research and development in information retrieval, SIGIR'13, pages 861–864, New York, NY, USA, 2013. ACM.

– M. R. Bouadjenek, A. Bennamane, H. Hacid, M. Bouzeghoub. **Evaluation of Personalized Social Ranking Functions of Information Retrieval.** In Florian Daniel, Peter Dolog, and Qing Li, editors, Web Engineering, volume 7977 of Lecture Notes in Computer Science, pages 283–290. Springer Berlin Heidelberg, 2013.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub. **Personalized Documents Ranking With Social Contextualization.** Colloque sur l'Optimisation et les Systèmes d'Information COSI'13, pages 64-75, 9-11 Juin 2013, Alger, Algérie.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub, and J. Daigremont. **Personalized Social Query Expansion Using Folksonomy**. In the proceeding of the 34th Annual ACM SIGIR Conference, July 2011, Beijing, China: 1113-1114.

– M. R. Bouadjenek, H. Hacid, M. Bouzeghoub, J. Daigremont. **Une Nouvelle Approche d'Expansion Sociale de Requêtes dans le Web 2.0**. 8^{eme} COnférence en Recherche d'Information et Applications, 2011, Avignon, France: 41-48.

– Y. Lassoued, M. R. Bouadjenek, O. Boucelma, F. Lemos and M. Bouzeghoub. **GQBox: Geospatial Data Quality Assessment.** In the proceeding of the 18th ACM GIS International Conference on Geographic Information Systems, 2010, San Jose, USA: 534-535.

Reviews

Organizing committee:

- The 18th International Conference on Service-Oriented Computing (ICSOC 2020).
- The 19th international conference on web information systems engineering (WISE 2018).

Journal Reviewing:

- Knowledge and Information Systems, Springer 2018.
- Information Retrieval Journal, Springer 2018.
- Information Processing & Management, Elsevier 2017.
- Database: The Journal of Biological Databases and Curation, 2017.
- Artificial Intelligence and Law, Springer 2017.
- International Journal of Computer Systems Science and Engineering (IJCSSE 2016).
- Neurocomputing Journal, Elsevier 2015.

Conference Program Committees:

- The 18th International Conference on Service-Oriented Computing (ICSOC 2020).
- AAAI Conference on Artificial Intelligence, AAAI 2019.
- The 6th International Symposium on Networks, Computers and Communications (ISNCC 2019).
- The 19th International Conference on Web Information Systems Engineering (WISE 2018).
- The 5th International Symposium on Networks, Computers and Communications (ISNCC 2018).
- The 4th International Symposium on Networks, Computers and Communications (ISNCC 2017).
- The 30th International FLAIRS Conference (EAST-FLAIRS 2017).
- The 3rd International Symposium on Networks, Computers and Communications (ISNCC 2016).
- 3rd Annual International Symposium on Information Management and Big Data (SIMBig 2016).

Additional review member in:

- The Web Conference, WWW 2019.
- 18^{th} International Conference on Extending Database Technology (EDBT 2015).
- 30^{th} ACM/SIGAPP Symposium On Applied Computing (SAC 2015).

- 13^{th} IEEE International Conference on Data Mining (ICDM 2014) .
- 20^{th} ACM International Conference on Multimedia ACM Multimedia 2012.
- 10^{th} International Conference on Service Oriented Computing.
- The first International Workshop on Mining Social Network Dynamics (MSND) 2012.
- 2011 IEEE/WIC/ACM International Conference on Web Intelligence (WI 2011).

Teaching Experience

Deakin University, Geelong, Australia.
University of Toronto, Toronto, Canada.
University of Paris-Saclay, Versailles, France.

I have experience with courses related to: Information Retrieval; Machine Learning; Natural Language Processing; Data Science; Social Network Analysis; Basics and introduction to Unix OS; Concepts and Basics in Networking; Introductions to relational Databases; Web application languages including (X)HTML/CSS, JavaScript, JSP, and PHP. Below is a detailed summary of my teaching experience.

	Period	Course	Level	Students	Lecture	Tuto. & Wor.
Deakin	Winter 2020	SIT799 Deep Learning	Grad	$\simeq 200$	0.00	44.00
Deakin	Winter 2020	SIT799 Human Alligned AI	Grad	$\simeq 25$	22.00	11.00
Deakin	Fall 2020	SIT740 Research and Developement in IT	Grad	$\simeq 60$	11.00	22.00
uoft	Winter 2019	MIE1513 Decision Support Systems	Grad	$\simeq 30$	39.00	26.00
UVSQ	2012-2013	IN 506 (ex 116) Formal specification	Undergrad	$\simeq 30$	0.00	72.00
		MS1 INFO 204 Project Supervision -- TER	Undergrad	$\simeq 30$	0.00	10.00
UVSQ	2011-2012	IN 506 (ex 116) Formal specification	Undergrad	$\simeq 30$	0.00	30.00
		PIIN 4001 Computer science Project	Undergrad	$\simeq 30$	18.00	37.50
UVSQ	2010-2011	PIIN 4001 Computer science Project	Undergrad	$\simeq 30$	6.00	36.00
UVSQ	2009-2010	MS1INF 1B Conception of Databases (CBD)	Grad	$\simeq 30$	0.00	34.00
		PIIN 4001 Computer science Project	Undergrad	$\simeq 30$	6.00	36.00
		INI1 OUTI Engineering Tools	Undergrad	$\simeq 30$	0.00	6.00

Software

Viz-TIR, a Visual Twitter Search Tool based on Relevance-driven Clustering Optimization[13].
SocialSensor, a framework of topic learning in social media[14].
MultiSite-Rec, a distributed recommender system[15].
Patent-Search, an IR platform for Patent Prior Art Search[16].
LAICOS, a Personalized Social Web Search Engine.
QBox Services, a service based platform for data quality assessment.

Skills

Operating Systems: Windows 9X/XP/Vista/7, Linux, and MacOSX.
Programming Languages: C, C++, C#, Pascal, Object Pascal, JAVA and XML.
Script Languages: JavaScript, Bash, and Python.
Compilers: GNU GCC, Borland Delphi, NetBeans, Eclipse and Microsoft Visual C++.
Databases: SQL language, and practice of the SQL Server, MySQL, and PostgreSQL DBMSs.
Conception and Modeling: UML, Merise, and E/R (entity-relation).
Frameworks and platforms: Jung, Prefuse, PeerSim, Hadoop, Apache Spark and Apache Lucene.

Languages

English: Fluent, **French:** Native language, **Arabic:** Native language.

[13] http://206.12.91.26:8080/VizTIR/
[14] https://github.com/SocialSensorProject/socialsensor
[15] https://code.google.com/p/multi-site-rec/
[16] https://code.google.com/p/patent-search/

References

Scott Sanner <ssanner@mie.utoronto.ca> The University of Toronto.
Karin Verspoor <karin.verspoor@unimelb.edu.au> The University of Melbourne.
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Mokrane Bouzeghoub <mokrane.bouzeghoub@uvsq.fr> University of Paris-Saclay, Versailles, France.