

Mohcine Madkour

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Data Science, Data Integration, and Semantic Web

Five years' experience as a data scientist, research faculty member, and software engineer. Has successfully delivered projects in the machine learning, artificial intelligence, data integration, and software engineering spaces working with researchers in domains as diverse as medicine, biomedical informatics, Electrical engineering, and cognitive psychology. Driven by the opportunity to apply data analytics and programming skills to build new tools and organizational capabilities.

Professional Experience

June 2017- Present: Faculty member, [PRISMAp](#), University of Florida, FL
January 2018 Mirth Certified, [NextGen](#), Irvine, CA
May 2015-May 2017: Postdoctoral Associate, [School of Biomedical Informatics](#), UTHealth Houston, TX
Nov 2013- March 2015: Postdoctoral Fellow, [Engineering Technology Department](#), University of Houston, TX

Computer Language, Database, Machine-Learning & Web-development Skills:

- **Language & Cloud** - Python, R, Java, C++, JavaScript, AWS System admin.
- **Databases** - MySQL, SQLServer, NoSql, Cassandra, CQL, Neo4J
- **A.I.** -Deep Reinforcement Learning, Alexa skill development, OpenNLP, GATE, Convolutional Neural Network
- **ML** - Scikit-learn, TensorFlow, Pandas, NumPy, Theano, Keras, Weka, MATLAB, K-means, GAM, & Random Forest
- **Web** - Flask.py, Spring-MVC, PHP, JQuery.js, HTML, CSS, Pelican.py & Wordpress.
- **Data visualization** - d3.js, Seaborn, Matplotlib , ggplot2 & Tableau
- **Agile methodology** - Agile Scrum, Iterative Development

Data Analytics and Machine-learning Experience:

- **Mirth Connect** - Data Integration Developer, Healthcare's Interoperability, HL7 Standard, FHIR Standard
- **Linux System** - Database administrator, Cloud, Security
- **Data Visualization** - Longitudinal Data Analysis, Descriptive Statistics, Data pipeline
- **Regression Analysis** - Linear, logistic, multinomial
- **Performance measurement** - AUC, ROC, Specificity, Sensitivity
- **Clinical Study Design** - cohort study, case-control study, cross sectional study
- **Semantic Web** - Ontology Modeling, OWL, RDF, and SPARQL Inferencing Notation (SPIN)
- **Advanced data quality** - Data Inconsistency check, Data Integrity checking, Data Quality Assessment
- **Cyber Physical Systems** - Building Energy Efficiency, Microgrid, smart Campus, Building EMS, Smart Grid

Research & Platform Development

IDEALIST platform

Lead Analytic team to create a fully autonomous postoperative surgery risk calculator, which utilizes machine learning and deep learning to continuously refine its algorithms. The calculator predicts postoperative surgery risks with as much or more accuracy as a doctor using large scale patient data.

Predictive models for primary care patients

Build prediction models that help taking smart decisions using EHR collected in a primary care clinic. Working on real world event analysis application that predicts specific actionable primary care encounter events and detect soft patterns in data.

Modeling and Analysis of Clinical Care for HIT Improvement

Create OWL based model that capture essential features and requirements of the Conceptual Work Product (CWP) and the multiple specifications required by a system's functions. We used the consistency checking of OWL reasoner engine along with model checking to validate the CWP of an IT healthcare systems.

UH Smart Campus

Use a data-driven approach (AI / Machine learning) to estimate energy saving potential and monitor the demand response of energy at the University of Houston campus. Using Reinforcement learning to optimize energy consumption and central plant operations.

Teaching Experience

- Teaching Assistant/ Adjunct Prof./ Lecturer (2006-2017)
- ELET - 2300 Introduction to C++ Programming, University of Houston, Main Campus
- HI 5304 - Advanced Database Concepts for Health Informatics, UTHealth, Houston
- BMI 6306 - Information and Knowledge Representation in Health Informatics, UTHealth, Houston
- Java, Relational Databases, C, UML- Morocco

Awards / Services

- Best paper Award in the 10th IEEE International Conference On Computer Systems And Applications
- Member of the organization team of the ICBO 2014 at Houston
- PC of the 3th IEEE International Conference on Computer Systems and Applications, AICCSA 2016.
- IEEE External reviewer & AMIA 2016 reviewer
- Shibboleth Service Provider implementation for UF
- Active member in PASS, SQL Server Community

Grant / Submissions

- PI, CTSI UFII: Development of a FHIR-compliant data integration hub for real-time risk prediction in Intra-Operative period
- Co-I, Qatar-QNRF_2013: Smart Campus Energy Management System: a User Preference-Behavioral Approach NPRP No.: 7-1723-2-644. Nov 2013
- Co-I, NSF_CPS: Synergy-2013: Smart Management of Interconnected Federated Microgrids: Big data approach. Aug 2014

Education

Ph.D. , Computer Science, Honors, University of Mohamed 5 , Rabat, Morocco	2013
M.S. , Web system Technologies, Télécom Bretagne , Brest, France	2012
M.S. , Computer Science, University of Ibn Zohr , Agadir, Morocco	2008
B.S. , Applied Mathematics, University of Ibn Zohr , Agadir, Morocco	2006

Example Publications

Selected Refereed Journal Papers

- [J01] Azra Bihorac, T Baslanti, A Ebadi, A Motaei, **M Madkour**, et al “[MySurgeryRisk: Development and Validation of a Machine-learning Risk Algorithm for Major Complications and Death After Surgery](#)” Annals of surgery, 2018/4/6
- [J02] **M. Madkour**, D. Benhaddou, C. Tao “[Temporal data representation, normalization, extraction, and reasoning: A review from clinical domain](#)” Computer methods and programs in biomedicine Volume 128, May 2016, Pages 52–68
- [J03] **M Madkour**, D. El Ghanami, A. MAACH “[QoS-Based Approach For Context- Aware Service Selection With Fuzzy Preferences Handling](#)” International Journal of Computer Applications in Technology, Vol. 47, No 4 /2013, pp. 379-391
- [J04] **M. Madkour**, A Maach, D. El Ghanami, A. HASBI “[Context- Aware Service Adaptation: An Approach Based on Fuzzy Sets and Service Composition](#)” Journal of Information Science and Engineering Vol. 29, No.1, ISSN: 1016-2364, pp. 1-16
- [J05] **M. Madkour**, A Maach, D.El Ghanami, “[Context-Aware Middleware For Services Retrieval And Adaptation](#)” International Review on Computers and Software Vol. 7 N. 1 Print ISSN 1828-6003 Cd- om ISSN: 1828-6011
- [J06] **M. Madkour**, A. Maach, D. El Ghanami, “[An Ontology-Based Context Modeling For Vehicle Context-Aware Service](#)” Journal of Theoretical and Applied Information Technology Vol. 34 No2 E-ISSN 1817-3195 ISSN 1992-8645
- [J07] **M. Madkour**, D El Ghanami, A Maach “[QoS-Based Approach For Context-Aware Service Selection](#)” International Journal of Computational Linguistics Research, Volume: 3, Issue: 3 pp: 109-124
- [J08] **M. Madkour**, A. Maach, “[Intelligent Pervasive Middleware for Context-Aware Vehicle Services](#)” Journal of Communications and computer Engineering VOL 2, NO 3 ISSN: 2090-6234

Selected Referred papers at Conferences

- [C01] **M. Madkour**, J. Du, H. Song, C. Tao "A Representational Analysis of A Temporal Indeterminacy Display in Clinical Events" at The 1st International Workshop on Semantics-Powered Data Analytics (SEPDA 2016) in conjunction with the IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2016) to be held at Shenzhen, China on December 15, 2016
- [C02] **M. Madkour**, J. Du, H. Song, C. Tao "Temporal clinical events clustering and visualization", Proceedings of the IEEE VIS 2016 Workshop on Temporal & Sequential Event Analysis.
- [C03] **M Madkour**, D. Benhaddou, R. Cline, M. Buriello, N.Khalil "Living campus: Towards a Context-Aware Energy Efficient Campus using Weighted Case Based Reasoning" The 29th Artificial Intelligence Conference, January 25–30, 2015, Austin Texas, USA, (AAAI-15)
- [C04] **M Madkour**, A Maach, D. El Ghanami "Policy driven adaptation of context-aware services with preferences supporting" in proceeding of the 10th IEEE International Conference On Computer Systems And Applications (AICSSA'13)
- [C05] **M. Madkour**, A. Maach, D. El Ghanami, A. Hasbi "Context- Aware Service Retrieval In Uncertain Context" in Proceeding of IEEE International Conference on Multimedia Computing and Systems (ICMCS'12)
- [C06] **M.Madkour**, A. Maach, D. El Ghanami, A. Hasbi "Fuzzy-Based Approach For Context-Aware Service Retrieval " in proceedings of IEEE Second international conference on Innovative Computing Technology (INTECH'12)
- [C07] **M. Madkour**, A. Maach, D. El Ghanami, "Vehicle Context Aware Framework For Services Provisioning And Adapting" in proceeding of International Workshop on Information Technologies and Communication (Wotic'11)
- [C08] **M. Madkour**, A. Maach, "Plateforme de localisation et de télédiagnostic des véhicules" in proceedings of Logistiqua'10

Selected Book Contribution

- [B01] **M. Madkour**, M. Bakhouya, A. Maach, D. El Ghanami "An Approach for Context-Aware Service Selection Using QoS and User Preferences" In Maristella Matera, Gustavo Rossi "Trends in Mobile Web Information Systems" pp 110-119, Springer International Publishing.