

Mohamed MOHAMED

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Biography

Mohamed Mohamed is a Postdoc Researcher with IBM's Almaden Research Center in San Jose, CA, member of the Cloud Management Services department. Mohamed is currently working on different projects that are primarily related to PaaS including data management and SLAs management. During the last years, Mohamed was working on different aspects of management of Cloud resources and was involved in different projects (CompatibleOne, EasiClouds, OpenPaaS) as well as standardization efforts (OCCI).

Education

PhD in Computer Sciences

Institute Mines-Telecom, Telecom SudParis, France
Under the supervision of Pr. Djamel BELAID and Pr. Samir TATA

11/2011–11/2014

Highest Honors

Master in Computer Sciences

University of sciences el Manar, Tunisia
Under the supervision of Pr. Samir TATA and Dr. Samir MOALLA

09/2009–09/2011

Highest Honors

Research Activities

My main research activities are developed within the field of Cloud Computing. They concern managing resources and enabling new services in the Cloud. Recently, I have been working in IBM on designing and developing a new model for SLA description, deployment and management. During my PhD in Institut Telecom, I have been working on extending OCCI standard to provide an Autonomic Computing infrastructure for Cloud Resources.

SLA description and management.....

In this work, we are designing a new language for SLA description that we call rSLA. By this language, we aim to propose a very simple and human readable manner to describe all the aspects of SLA using a simple yet powerful ruby-based DSL. Behind that, we are building a holistic infrastructure that allows deploying the SLA and binding all required services to enable the management and enforcement of SLAs.

Enterprise Persistence for PaaS.....

PaaS platforms such as Cloud Foundry typically do not support an inherent persistence model but rely on service access to persistence services. We explore ways of providing enterprise grade object and file system services in the context of containerized application instances for scenarios that still require traditional persistence access such as the reliance on existing tools and libraries or the sharing of data with other applications expecting traditional, direct data access.

OCCI Extension for Platform and Application.....

In this work, we extended OCCI core Model to describe Platform and Application resources. It provides a generic representation of existing platforms and their components. The extension entails

all the needed OCCI Resources and Links that allow the provision of Platform and Application Resources. Furthermore, we proposed COAPS as a generic REST API that allows to seamlessly provision applications over different PaaS providers.

OCCI Extension for Autonomic Computing.....

In this work, we extended OCCI standards to provide an Autonomic Computing Loop for Cloud Resources independently of their level. The extension entails all the needed Entities (i.e., Resources and Links) and Mixins that, starting from a Service Level Agreement (SLA), gather and analyze monitoring data. It eventually generates and applies reconfiguration actions on the concerned Resources to honor the SLA.

Scalable Micro-container for service-based applications in cloud computing.....

In this work, we proposed a new Service container dedicated to one deployed service that avoids the processing limits of classical Service containers. Our approach addresses scalability and reduces memory consumption and response time. The evaluation that we performed show the scalability of the proposed Micro-container.

Academic Research Projects

EASI-CLOUDS (<http://easi-clouds.eu/>): Extendable Architecture and Service Infrastructure for CLOUD-computing Software. The objective of EASI-CLOUDS is to provide a comprehensive cloud computing infrastructure that will feature the three classical categories of cloud computing offerings with superior reliability, elasticity, security and ease-of-use characteristics at all levels.

CompatibleOne (<http://www.compatibleone.org/>): CompatibleOne aims at providing an open and interoperable "cloudware" allowing to create, deploy and manage private, public or hybrid cloud platforms. It offers a simple and unique interface allowing the description of user's needs, in terms of resources, and their subsequent provisioning on the most appropriate cloud provider.

Open-PaaS (<https://open-paas.org/display/openpaas/Open+PAAS+Overview>): The Open-PaaS project aims at developing a PaaS (Platform as a Service) technology dedicated to enterprise collaborative applications deployed on hybrid clouds (private / public).

Patents

[1] "Optimizing monitoring for Software defined ecosystems", H. Ludwig, N. Mandagere, M. Mohamed and K. Stamou, May, 2015

[2] "System and Method for Discovering and Publishing Device Changes in a Cloud Environment", M. Mohamed, B. Langston and Y. Song, May, 2015

Publications

Submitted papers.....

[1] "Smart Monitoring in the Cloud", M. Mohamed, N. Mandagere, H. Ludwig and K. Stamou, CNSM 2015

[2] "rSLA: Monitoring SLAs in dynamic service environments", H. Ludwig, K. Stamou, M. Mohamed, N. Mandagere, B. Langston, G. Alatorre, H. Nakamura, O. Anya and A. Keller, ICSOC 2015

[3] "Collaborative Autonomic Management of Distributed Component-based Applications", N. Belhaj, I. B. Lahmar, M. Mohamed and D. Belaïd, ICSOC 2015

[4] "Extending OCCI for Autonomic Management in the Cloud", M. Mohamed, D. Belaïd and S. Tata, The Journal of Systems and Software 2015

Accepted papers.....

- [1] "Collaborative Autonomic Container for the Management of Component-based Applications", N. Belhaj, I. B. Lahmar, M. Mohamed and D. Belaïd, WETICE 2015
- [2] "An Autonomic Approach to Manage Elasticity of Business Processes in the Cloud", M. Mohamed, M. Amziani, D. Belaïd, S. Tata and T. Melliti, FGCS Journal, 2014
- [3] "An approach for Monitoring Components Generation and Deployment for SCA Applications", M. Mohamed, D. Belaïd and S. Tata, (book chapter) CCIS 2014
- [4] "Monitoring and Reconfiguration for OCCI Resources", M. Mohamed, D. Belaïd and S. Tata, CloudCom 2013
- [5] "PaaS-independent Provisioning and Management of Applications in the Cloud", M. Sellami, S. Yangui, M. Mohamed and S. Tata, CLOUD 2013
- [6] "Self-Managed Micro-Containers for Service-Based Applications in the Cloud", M. Mohamed, D. Belaïd and S. Tata, WETICE 2013
- [7] "Monitoring of SCA-based Applications in the Cloud", M. Mohamed, D. Belaïd and S. Tata, CLOSER 2013
- [8] "Adding Monitoring and Reconfiguration Facilities for Service-based Applications in the Cloud", M. Mohamed, D. Belaïd and S. Tata, AINA 2013
- [9] "How to Provide Monitoring Facilities to Services when they are Deployed in the Cloud?", M. Mohamed, D. Belaïd and S. Tata, CLOSER 2012
- [10] "Scalable service containers", S. Yangui, M. Mohamed, S. Tata and S. Moalla, CloudCom 2011
- [11] "Service micro-container for service-based applications in Cloud environments", M. Mohamed, S. Yangui, S. Moalla and S. Tata, WETICE 2011

Community Services

Member of the Technical Program Committee:

- 23rd International Conference on COOPERATIVE INFORMATION SYSTEMS, CoopIS 2015
- 24th IEEE International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises WETICE 2015
- 5th International Conference on Cloud Computing and Services Science, CLOSER 2015
- 6th International Conference on Cloud Computing, GRIDs, and Virtualization, Cloud Computing 2015
- 1st workshops on Emerging Software as a Service and Analytics, ESaaS 2014
- 3rd International Conference on Cloud Computing and Services Science, CLOSER 2014
- 13th International Conference on Networks, ICN 2014
- International Conference on Signal Processing and Telecommunications, ICSPT 2013
- 8th International Conference on Internet and Web Applications and Services, ICIW 2013

Other review activities:

- IEEE Transactions on Cloud Computing, 2014
- IEEE Transactions on Computers, 2014
- Encyclopedia of Cloud Computing, 2014

Session Chair:

- Third International Conference on Cloud Computing and Services Science, CLOSER' 2013

Member of the Organization Committee:

- International Conference on Service Oriented Computing, ICSOC 2014

- Summer School on Cloud Computing, SSCC 2013
- IEEE International Conference on Collaboration Technologies and Infrastructures, WETICE 2011

Guest editor:

- International Journal of Organizational and Collective Intelligence: Special Issue on Collaboration and Coordination of Autonomic Management in Cloud Environments, 2015.

Technical skills

- Cloud Computing: OpenStack/SoftLayer IaaS, CloudFoundry/BlueMix/OpenShift PaaS
- Containers: Docker, Vagrant, Flocker
- Programming Languages: JAVA, C++, C, Ruby, Python
- Web Programming: JSP, JSF, JPA, Hibernate, Restlet, Jersey, Flask, Sinatra
- Databases: MySQL, Oracle, Cloudant

Languages

Excellent skills for: English, French and Arabic (mother tongue)