

Certificate of achievement

It is hereby certified that

IBRAHIM Abdallah Ali Zainelabden Abdallah

born on 24 October 1989 in Suez (EG)

has satisfied the requirements for the degree

Docteur en Informatique

as defined by the Règlement des études dated 14th June 2019
on earning a PhD degree at the University of Luxembourg.

Title of the thesis: Performance Evaluation and Modelling of
SAAS Web Services in the Cloud

Date of the defence: 10 January 2020

Closure Date: 22 January 2020

The degree will be formally handed out during the graduation
ceremony in December 2020.



Prof. Dr Jens Kreisel
Vice-rector for Research

Université du Luxembourg
Campus Belval
2, Avenue de l'Université
L-4365 Esch-sur-Alzette

For the attention of
Mr. Abdallah IBRAHIM



CSCE

DOCTORAL PROGRAMME
IN COMPUTERSCIENCE
& COMPUTER ENGINEERING

Esch-sur-Alzette, January 29th 2020

CERTIFICATE OF ACHIEVEMENT

We hereby certify that Mr. Abdallah Ali Zainelabden Abdallah IBRAHIM, born in Suez (Egypt), on 24/10/1989, has successfully completed the Doctoral Programme in Computer Science & Computer Engineering.

He collected 47,5 ECTS on the 20 required.

The details of the certifiable activities are in appendix.

A handwritten signature in black ink.



Prof. Jean-Marc SCHLENKER
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A handwritten signature in black ink.

Prof. Peter Y. A. RYAN
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This document has value only upon presentation of the PhD diploma of the University of Luxembourg.



List of certifiable activities, validated in the frame of the DP-CSCE :

	- SS 2015-2016	- SS 2016-2017	- WS 2015-2016	- WS 2016-2017	- WS 2017-2018	- SS 2017-2018	- WS 2018-2019	- SS 2018-2019	Grand Total
CSCE Seminars									
- Designing Networks of the Future Université du Luxembourg									1
- Language Course									2
- French Language Course A1 Prolingua, Luxembourg									2
- French Language Course A2.1 Prolingua, Luxembourg									2
- German Language Course A1 Prolingua, Luxembourg									2
- Language Course: Luxembourgish A1 Prolingua, Luxembourg									2
- French Language course B1.2 Institut National des Langues, Luxembourg									2
- Luxembourgish Language course B1.1 Institut National des Langues, Luxembourg									2
- Other certifiable activity									2
- Smart ICT for business innovation University of Luxembourg									18
- Summer/Winter School									18
- High Performance Computing Université du Luxembourg									0,5
- IEEE Communication Society Summer School Trento, Italy									2
- Second NESUS Winter School & PhD Symposium 2017 University of Calabria, Italy									2
- Selected topics on High Performance Computing Université du Luxembourg									2
- Summer School: Smart Cities, Designing Places and Urban Mentalities Vienna, Austria	4								4
- Transferable Skills									1
- Good Scientific Practice in Natural Sciences Université du Luxembourg	1								1
- Introduction to Entrepreneurship & Entrepreneurial Behaviour Université du Luxembourg		1							1
- Lecturing & Teaching at University Université du Luxembourg				1					1
- Research Writing: key grammar & genres Université du Luxembourg					1				1
- DP-MA Seminar						1			1
- Interdisciplinary Lunch Seminar University of Luxembourg									1
Grand Total	1	1	4	2	1	1	2	0,5	50 47,5
Summer semester 2018-2019									

Thesis Report – Detailed opinion of the Dissertation Defence Jury

(The detailed opinion is part of the diploma supplement)

Candidate's surname and forename IBRAHIM ALI ZAINELABDEN Abdallah
 Date of birth 24/10/1989 Place of birth Suez (EG)
 Thesis supervisor(s) BOUVRY Pascal
 Thesis title PERFORMANCE EVALUATION AND MODELLING
 OF SAAS WEB SERVICES IN THE CLOUD
 Research field/Discipline Informatique
 Reference N° PhD-FSTC-2020-01



Dissertation Defence Jury

	Title and name *	Institution
Chair	Prof. Dr Sorger Ulrich	University of Luxembourg
Vice Chair	Prof. Dr Talbi El-Ghazali	Université de Lille
Member (supervisor)	Prof. Dr Bouvry Pascal	University of Luxembourg
Member	Dr Kliazovich Dzmitry	ExaMotive S.A.
Member	Dr Varrette Sébastien	University of Luxembourg

* Official title in the institution of origin

Detailed opinion of the Dissertation Defence Jury

According to the University Law, art. 37(6), the Jury evaluates the thesis and the defence according to the following criteria:

- Major contribution to the advancement of scientific knowledge;
- Research autonomy of the doctoral candidate and relevance of the research methods used;
- Structure of the work and literature/references;
- Quality of the written presentation of the thesis and the language used;
- Quality of the oral presentation and defence of the thesis.

See attached report

Thesis proposed for the “best thesis award” of the

YES NO

If yes, please justify:

Hereafter, places, dates, and signatures of all the jury's members (if the detailed opinion exceeds this page, each additional page has to bear the initials of the Jury President).

Prof. Dr Sorger	Prof. Dr Talbi	Prof. Dr Bouvry	Dr Kliazovich	Dr Varrette
Ulrich	El-Ghazali	Pascal	Dzmitry	Sébastien



Thesis Report – Decision of the Dissertation Defence Jury

Candidate's surname and forename IBRAHIM ALI ZAINELABDEN Abdallah
 Date of birth 24/10/1989 Place of birth Suez
 Thesis supervisor(s) BOUVRY Pascal
 Thesis title PERFORMANCE EVALUATION AND MODELLING
 OF SAAS WEB SERVICES IN THE CLOUD
 Research field/Discipline Informatique
 Reference N° PhD-FSTC-2020-01

* * *

Having regard to article 37 of the Law dated 27 June 2018 related to the organisation of the University of Luxembourg and chapter 5 of the study regulations dated 21 May 2019 defining the rules for obtaining a doctoral degree (PhD) from the University of Luxembourg;

Having regard to the authorisation granted by the Rector of the University of Luxembourg to the candidate on 12/11/2019 to defend her/his thesis;

Having regard to the nomination of the Dissertation Defence Jury by the Rector of the University of Luxembourg on 12/11/2019;

Dissertation Defence Jury

	Title and name *	Institution
Chair	Prof. Dr Sorger Ulrich	University of Luxembourg
Deputy Chair	Prof. Dr Talbi El-Ghazali	Université de Lille
Member (supervisor)	Prof. Dr Bouvry Pascal	University of Luxembourg
Member	Dr Kliazovich Dzmitry	ExaMotive S.A.
Member	Dr Varrette Sébastien	University of Luxembourg

* Official title in the institution of origin

Having regard to the candidate's defence at the Faculty of Science, Technology and Communication on 10/1/2020;

The Dissertation Defence Jury

- confers the title of "Docteur de l'Université du Luxembourg" [Doctor of the University of Luxembourg] on the candidate
- Does not confer the title of "Docteur de l'Université du Luxembourg" on the candidate

Authorisation to reproduce the thesis

- The dissertation may be reproduced as is
- The dissertation may be reproduced subject to the changes indicated in the Thesis Report – Jury's Analysis.

Esch/Alzette, 10/1/2020

Prof. Dr Sorger
Ulrich

Prof. Dr Talbi
El-Ghazali

Prof. Dr Bouvry
Pascal

Dr Khazovich
Dzmitry

Dr Varrette
Sébastien

Names and signatures of jury's members that attended the dissertation defence – all signatures must be on this page)



Dissertation Report for the PhD Thesis of Abdallah Ali Zainelabden Abdallah Ibrahim

The thesis of Mr Abdallah Ali Zainelabden Abdallah Ibrahim entitled "Performance Evaluation and Modeling of SaaS Web Services in the Cloud" proposes a novel framework evaluating cloud-computing services.

It is dedicated to the evaluation in a fair and stealth way of the Quality of Service (QoS) and Service Level Agreement (SLA) compliance for services deployed on such infrastructures under the Software-as-a-Service (SaaS) model.

The core contribution of this thesis is a framework called PRESEnCE and its implementation. It relies on a set of distributed agents responsible for the monitoring, modeling and evaluation of carefully selected performance metrics.

PRESEnCE is used to automate and optimize the traffic generation induced by the agent evaluation to allow fine-grain analysis and comparison of the Cloud Service Providers (CSPs) in an obfuscated way. Coupled with a probability-based model for detecting SLA breaches, the proposed framework permits a service ranking CSPs by assessing the performance and scalability of the delivered web services.

The contributions have been published in a number of international peer-reviewed venues. A best paper award has been attributed at the 32nd IEEE International Conference on Information Networking (ICOIN).

The jury unanimously acknowledges the high quality of the presentation, including the supporting material, showing his pedagogical skills. The answers of Mr Ibrahim to the board questions demonstrated his mastering of the field, quality of the results, and also new opportunities for extending the work.

For all the above-mentioned reasons, the jury confers the title of "Docteur de l'Université du Luxembourg en informatique" to Mr Abdallah Ali Zainelabden Abdallah Ibrahim.

