Application Documents

Hazem Lahoual

Ulmenweg 55, 68167 Mannheim, Germany   ✆ +49 176 35 66 32 54   ✉ hazem.lahoual@gmail.com

Table of contents

Curriculum Vitæ

Personal Data

Name	Hazem Lahoual.
Date of birth	23. March 1992.
Nationality	Tunisian.
GitHub	https://github.com/HazemLahoual

Experience

04/2020 – now **Research scientist**, *Production AI, BASF*, Ludwigshafen, Germany.
- Internship and master thesis supervised by Dr. Satya Samal Swarup (BASF), Prof. Dr. Holger Fröhlich (Frauenhofer Institute) and Prof. Dr. Klaus-Robert Müller (TU Berlin)
- Probabilistic Machine learning in chemical process engineering
- Literature survey and benchmark between different probabilistic machine learning methods.
- Modeling chemical processes and biochemical models using deep Gaussian processes.
- Benchmarking of performance against surrogate methods and machine learning algorithms.
- Keywords : Probabilistic Machine learning, Deep Gaussian Processes, Hybrid modeling, PyTorch.

10/2019 – 03/2020 **Machine Learning Project**, *Intelligent Data Analysis (IDA) Group, Head of group: Prof. Dr. Klaus-Robert Müller, Technische Universität Berlin*, Berlin, Germany.
- Working on unpaired image-to-image translation using cycle-consistent adversarial networks: Generative Adversarial Networks (GAN) for domains transfer.
- Implementing and evaluating the prototype (tuning the hyper-parameters, varying the number of the residual blocks, methods benchmarking, etc.).
- Testing and and working on possible applications in business.
- Keywords : Generative Adversarial Networks, Image-to-Image Translation, Cycle-Consistency Loss, PyTorch.

03/2016 – 07/2016 **Undergraduate researcher**, *IUT Montreuil, Paris 8 University*, Paris, France.
- Improving of an Image Search Engine using spatial features.
- Using topological methods for object detection.
- Working on artificial intelligence algorithms to improve the segmentation and the annotation process.
- Keywords : Image Search, Image Analysis, Spatial Features, MATLAB.

07/2015 – 09/2015 **Undergraduate researcher**, *University of Tehran*, Tehran, Iran.
- Exchange student at the University of Tehran, Iran as part of IAESTE exchange program.
- Modeling of linear optimization problems with a recurrent neural networks.
- Working on stability conditions for the convergence to the optimal solution.
- Keywords : Neural networks, Ordinary differential equations, Optimization, MATLAB.

Education

10/2018 – Present   **Master of Science in Scientific Computing**, *Technische Universität Berlin*, Berlin, Germany.
Focus: Scientific Computing, Numerical Mathematics, Optimization, Machine learning.

09/2013 – 09/2016   **Master's Degree in Applied Mathematics and Modeling Engineering**, *Higher National School of Engineers of Tunis (ENSIT)*, Tunis, Tunisia.

Conferences & Workshops

09/2020   Gaussian Process and Uncertainty Quantification Summer School, 2020 organized by the universities of Sheffield and Cambridge, UK.

Skills

Background   Scientific Computing, Numerics of ODE/PDE, Optimization, Machine Learning (Bayesian Decision Theory, Dimensionality Reduction, Ensemble Methods, Kernel Methods, Gaussian processes, Deep Neural Networks).

Technical   Python (NumPy, SciPy, Scikit-learn, PyTorch, GPyTorch), C/C++, Git, MATLAB.

Languages

Arabic   Native speaker.
English   Fluent.
French   Fluent.
German   intermediate.

Interests

Tennis, Ping-Pong, Running, Chess.

Mannheim, 01.01.2021

Certificates

Technische Universität Berlin

Straße des 17. Juni 135
10623 Berlin

Übersicht über alle Leistungen

Name des Studierenden:	Hazem Lahoual
Geburtsdatum und -ort:	23.03.1992 in Douz
(angestrebter) Abschluss:	Master
Matrikelnummer:	404582

Scientific Computing Prüfungsordnung 2005

Es besteht an der Technischen Universität Berlin weiterhin Prüfungsanspruch für den oben genannten Studiengang.

Prüfungsnr	Bezeichnung der Leistung	Semester	Prüf. Datum	Note	Status	LP	Versuch
9998	**Gesamtkonto Scientific Computing 2005**					**93,0**	
10000	**Bereich Scientific Computing**					**27,0**	
1430	**Numerische Mathematik II**					**10,0**	
1435	Modulprüfung: Numerische Mathematik II	SoSe. 19	07.08.2019	1,0	BE	10,0	1
30800	**genehmigtes Modul1 Scientific Computing Numerische Lineare Algebra II**					**5,0**	
30805	Numerische Lineare Algebra II	SoSe. 19	09.09.2019	1,0	BE	5,0	1
31300	**Numerische Lineare Algebra**					**5,0**	
3130	Numerische Lineare Algebra	WiSe. 18/19	02.04.2019	1,3	BE	5,0	1
33300	**Wissenschaftliches Rechnen**					**7,0**	
3330	Modulprüfung: Wissenschaftliches Rechnen	WiSe. 18/19	27.03.2019	1,0	BE	7,0	1
12000	**Bereich Angewandte Mathematik**					**20,0**	

Berlin , den 16. November 2020   **Bescheinigung ohne Unterschrift gültig**

Übersicht über alle Leistungen

Prüfungsnr	Bezeichnung der Leistung	Semester	Prüf. Datum	Note	Status	LP	Versuch
30900	**genehmigtes Modul1 Angewandte Mathematik** **Convex Optimization and Applications (ADM III)**					**10,0**	
30905	Convex Optimization and Applications (ADM III)	WiSe. 18/19	28.02.2019	1,0	BE	10,0	1
30910	**genehmigtes Modul 2 Angewandte Mathematik** **Optimalsteuerung bei partiellen Differentialgleichungen**					**10,0**	
30915	Optimalsteuerung bei partiellen Differentialgleichungen	SoSe. 20	11.09.2020	1,0	BE	10,0	1
13000	**Bereich Anwendungsdisziplin**					**18,0**	
31010	**Anwendungsdisziplin Modul 1**					**9,0**	
31015	Machine Learning 1-X	WiSe. 18/19	07.03.2019	2,3	BE	9,0	1
31020	**Anwendungsdisziplin Modul 2**					**9,0**	
31025	Machine Learning 2-X	SoSe. 19	15.07.2019	2,0	BE	9,0	1
14000	**Bereich Wahlbereich**					**9,0**	
600100	**Wahlmodul 1**					**9,0**	
6010	Machine Learning Project	WiSe. 19/20	13.12.2019	1,0	BE	9,0	1
15000	**Bereich Mathematische Seminare**					**12,0**	
17500	**Mathematisches Seminar**					**6,0**	
1750	Funktionalanalysis und Data Science	WiSe. 19/20	31.03.2020	1,7	BE	6,0	1
30700	**Projektseminar**					**6,0**	
30705	Numerische Mathematik	WiSe. 19/20	15.03.2020	1,0	BE	6,0	1
16000	**Bereich Forschungspraktikum**					**7,0**	
16100	Forschungspraktikum	SoSe. 20	26.08.2020	1,0	BE	7,0	1

Berlin , den 16. November 2020   **Bescheinigung ohne Unterschrift gültig**

Erläuterungen

LP Leistungspunkte

* Leistungen wurden in einem anderen Studiengang oder an einer anderen Hochschule erbracht und anerkannt
EMP ersetzte Modulprüfung

Beschreibung des Notensystems, das an der Hochschule angewendet wird:

1,0 / 1,3 / 1,5	sehr gut
1,7 / 2,0 / 2,3 / 2,5	gut
2,7 / 3,0 / 3,3 / 3,5	befriedigend
3,7 / 4,0	ausreichend
5,0	nicht ausreichend

Status:

BE bestanden
NB nicht bestanden
EN endgültig nicht bestanden

Diese Bescheinigung wurde elektronisch erstellt und ist ohne Unterschrift gültig.
Zusätze und Änderungen bedürfen der ausdrücklichen Bestätigung durch das Referat Prüfungen.

Verifikationsnr.: FOPBVRZJSKL0

Zur Verifikation dieser Bescheinigung wählen Sie bitte folgende Webadresse:
www3.ib.tu-berlin.de/verify

◻▪ BASF

We create chemistry

Ludwigshafen
September 30, 2020

CERTIFICATE

Mr. Hazem Lahoual, born on March 23, 1992, took part in an internship from April 1, 2020 until September 30, 2020 in our department Digitalization of Production & Technology.

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions.

Mr. Lahoual was responsible for the following tasks:

* Setting-up (bio)chemical process models
* Surrogate modeling with probabilistic methods
* Machine-learning infrastructure
* Continued collaboration within BASF as well as externally, with the University of Bonn

During his stay Mr. Lahoual also participated in activities related to the internship.

Mr. Lahoual demonstrated extraordinary initiative, great diligence and motivation at all times and always completed his tasks in a highly goal-oriented manner. He also had an extremely rapid grasp of new information and was very flexible. Mr. Lahoual displayed excellent analytical skills and judgment even when faced with difficult tasks. Thanks to his good prior knowledge and skills and his engagement, he acquired good practical experience within just a short time. Mr. Lahoual also made highly extensive use of the opportunities offered to him in every respect and the outstanding quality of his work even when facing changing requirements was impressive. He was also an extremely conscientious intern who worked independently and always performed his tasks in a well planned and systematic manner. He completed the tasks assigned to him to our utmost satisfaction at all times. His performance far exceeded our expectations and requirements.

Mr. Lahoual was a responsible intern who integrated himself very well into the existing team and who was held in high esteem by his superiors and colleagues at all times for his friendly, obliging manner. His conduct toward his superiors and colleagues was always exemplary.

We would like to thank Mr. Lahoual for the successful cooperation and wish him all the best for the future and much success for his further career.

BASF SE
HRdirekt Berlin

The Gaussian Process Summer School

In recognition of the completion of the prescribed program of study, this certificate is hereby awarded to

Hazem Lahoual

In testimony whereof, this certificate has been conferred on the 16th of September 2020, in Sheffield, United Kingdom.

_____
Dr. Wil O. C. Ward
School Coordinator

_____
Dr. Mauricio A. Álvarez López
Programme Director

Ulmenweg 55 − 68167 Mannheim, Germany

📞 *+49 176 35 66 32 54* ▪ ✉ *hazem.lahoual@gmail.com*

Hafaiedh Abdallah

Interprète Assermenté
Official Translater

Republic of Tunisia
Ministry of Higher Education and Scientific Research
University of Tunis
National Higher School of Engineers of Tunis

_____

Considering the decree N° 1269 of 2013 dated February 26th, 2013 relating to the transformation of the higher school of sciences and techniques of Tunis into the higher national school of engineers of Tunis,
And the decree N° 1932 dated November 2nd, 1992, determining the authority empowered to sign the national scientific diplomas,
And the decree N° 2602 of 1995 dated december 25th, 1995, relating to the general status of the studies regime and the conditions of obtainment of the National Diploma of Engineer, mainly its article 16.
And the minutes of deliberations of the boards of examinations for the academic year 2015-2016,
And the minutes of deliberations of the board of approval of trainings 2015-2016,
And the minutes of deliberations of the board of discussion of the graduation project dated September 27th, 2016.
The

**NATIONAL DEGREE OF ENGINEER
ENGINEERING IN APPLIED MATHEMATICS AND
MODELIZATION**

Is conferred upon Mr: **LAHOUEL Hazem,**
Born on: March 23rd, 1992 in Douz,
Holder of the national identity card number: 07168752,

Tunis on: October 10th, 2016.

N°: 16/266

Seal impression of the National Higher School of Engineers of Tunis.
The Director
Ahmed Ben Cheikh Larbi
Signature illegible

N.B: Only one copy is delivered.

Certified true translation
Date: .... 0 7 DEC. 2016
N° 4397 12/16

98 Rue Radhia Haddad (ex : Rue de Yougoslavie) - 2ème étage - Tunis Tél : 71.347.803 - Fax : 71.354.753
e-mail : iso.anis@gnet.tn

Ulmenweg 55 – 68167 Mannheim, Germany
✆ +49 176 35 66 32 54 ▪ ✉ hazem.lahoual@gmail.com

LIASD
Laboratory of advanced computer science of Saint-Denis
University Paris 8
2 Rue de la Liberté,
93526 Saint-Denis Cedex 02
France

INTERNSHIP ATTESTATION

I, the undersigned, Ms Mellouli-Nauwynck, lecturer in computer science, University Paris 8 Vincennes Saint-Denis (IUT of Montreuil), and member of the Laboratory of Advanced Computer Science of Saint-Denis (LIASD), do certify that Mister Hazem LAHOUEL, student engineer at the ENSIT, pursued an internship at the LIASD from March 15th through July 12th, 2016.

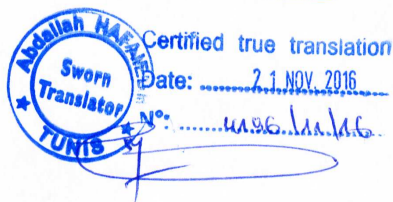Issued to be of use to whom it may serve.

Saint-Denis on July 12th, 2016

Nedra Mellouli-Nauwynck
Lecturer
Signature illegible
Seal impression of IUT Montreuil- computer science department

---

Certified true translation
Date: ....2 1 NOV. 2016..........
N°: ....ЦЛ96.Лл.ЦС.

Ulmenweg 55 – 68167 Mannheim, Germany
✆ +49 176 35 66 32 54   ▪   ✉ hazem.lahoual@gmail.com

The International Association for the Exchange of Students for Technical Experience

Work Experience Discover

CERTIFICATE

This is to certify that

Mr. Hazem Lahouel

Full name of the student

has successfully completed a period of practical training with

Mathematics Department

University of Tehran

Name and address of the employer

From *7. 22. 2015*   Until *9. 4. 2015*

under the auspices of the International Association for the Exchange of Students for Technical Experience

Signed on behalf of IAESTE

President IAESTE A.s.b.l.

53.08. 2015

Date / Place

National Secretary

IAESTE Association sans but lucratif. R.C.S.Luxembourg F1180.

IAESTE IRAN

Ulmenweg 55 – 68167 Mannheim, Germany

✆ *+49 176 35 66 32 54*   ▪   ✉ *hazem.lahoual@gmail.com*