HSLU Lucerne University of Applied Sciences and Arts

Computer Science and Information Technology

The Lucerne University of Applied Sciences and Arts hereby awards

James Levell

born on 2 October 1994
from Zürich ZH

the following title for successfully completing the Master's degree programme

Master of Science Hochschule Luzern/FHZ in Engineering with Specialization in Computer Science

The title «Master of Science Hochschule Luzern/FHZ» (abbreviated to «MSc Hochschule Luzern/FHZ») is protected according to the Higher Education Funding and Coordination Act HEdA in conjunction with the Lucerne University of Applied Sciences and Arts Agreement and the Academic Ordinance Governing Bachelor's and Master's Degree Programmes at the Lucerne University of Applied Sciences and Arts, FH Zentralschweiz.

The sponsoring body of the Lucerne University of Applied Sciences and Arts (FH Zentralschweiz) is composed of the Cantons of Lucerne, Uri, Schwyz, Obwalden, Nidwalden and Zug.

Rotkreuz, 12 January 2023

Governing Council of the Lucerne University of Applied Sciences and Arts
Stephan Keller, President

Lucerne University of Applied Sciences and Arts
School of Computer Science and Information Technology
Prof Dr René Hüsler, Dean

SCHWEIZERISCHER AKKREDITIERUNGSRAT
CONSEIL SUISSE D'ACCRÉDITATION
CONSIGLIO SVIZZERO DI ACCREDITAMENTO
SWISS ACCREDITATION COUNCIL
Institutionell akkreditiert nach HFKG 2019-2026

HSLU Lucerne University of Applied Sciences and Arts

Computer Science and Information Technology

Mr
James Levell
Moosburgstrasse 25a
8307 Effretikon

Campus Zug-Rotkreuz
Suurstoffi 1, 6343 Rotkreuz
T +41 41 757 68 11
www.hslu.ch, informatik@hslu.ch

Record of achievement

Program of study: **Master of Science in Engineering**

Mr. James Levell, born on 2nd October 1994, from Zürich ZH, has completed the following modules and respective credits in the autumn semester 2022:

module	ECTS grade	local grade	ECTS
Master-Thesis, Split Part 2 15 ECTS	A	A	15
Total ECTS			**15**

Prof. Sarah Hauser
Head of Bachelor's & Master's Programmes

Rotkreuz, 9th February 2023

Grading scheme: A = excellent; B = very good; C = good; D = satisfactory; E = sufficient; F = fail

Instruction of right of appeal:
An appeal against this decision can be lodged within 20 days of receipt with Prof. Sarah Hauser, Head of Bachelor's & Master's Programmes, Suurstoffi 1, 6343 Rotkreuz. The appeal must contain a formal request and a statement of reasons. Tangible evidence, in particular the decision being appealed, must be included with the letter of appeal.

HSLU Lucerne University of Applied Sciences and Arts

MSE | MASTER OF SCIENCE IN ENGINEERING

Transcript of Records

surname:	**Levell**	date of birth:	2 October 1994
first name:	**James**	matriculation number:	16-554-354
program of study:	Master of Science in Engineering		
field:	Computer Science		
date of entry:	22 February 2021	graduation:	12 January 2023

List of Modules

module	type of module [1]	ECTS grade [2]	local grade(s)	ECTS
Analysis of Text Data	TSM	D	4.5	3.0
Cloud Computing	TSM	B	5.5	3.0
Deep Learning	TSM	D	4.5	3.0
Innovation and Change Management	CM	C	5.0	3.0
Machine Learing	FTP	C	4.5	3.0
Master Thesis, Split Part 1	FV	A	A	15.0
Master Thesis, Split Part 1	FV	A	A	15.0
Optimization	FTP	C	5.0	3.0
Privacy and Law	CM	C	5.0	3.0
Specialization Project 1	FV	C	C	12.0
Specialization Project 2, Split Part 1	FV	A	A	9.0
Specialization Project 2, Split Part 2	FV	A	A	9.0
Sustainable Development	CM	B	5.0	3.0
Theoretical Computer Science	FTP	D	4.0	3.0
Wireless Communications	TSM	D	5.0	3.0
Total ECTS [3]				90.0

Spring semester 2021

module **Analysis of Text Data**

type of module [1] TSM grade(s)[2] 4.5 ECTS 3.0

The module deals with legal principles, legal rules and implementation rules and empowers to realize building projects in compliance with thebuilding law and also in coincidence with procedural laws.
language: English

---

module **Cloud Computing**

type of module [1] TSM grade(s)[2] 5.5 ECTS 3.0

Lecture on advanced topics in the domain of Cloud Computing, more precisely covering use, operations, development of and for IaaS and PaaS, as well as developing applications natively for the cloud.
language: English

---

module **Deep Learning**

type of module [1] TSM grade(s)[2] 4.5 ECTS 3.0

Deep Learning is one of the most active subareas of Machine Learning and Artificial Intelligence at the moment. Gartner has placed it at the peak in its 2017 Hype Cycle and the trend is going on. Deep Learning techniques are based on neural networks. They are at the core of a vast range of impressive applications, ranging from image classification, automated image captioning, language translation such as Google Translate, to playing Go and arcade games. This course focuses on the mathematical aspects of neural networks, their implementation (in Python), and their training and usage. Students will learn the fundamental concepts of Deep Learning and develop a good understanding of applicability of Deep Learning for Machine Learning tasks. After completing the course, students will have developed the skills to apply Deep Learning in practical application settings.
language: English

---

module **Innovation and Change Management**

type of module [1] CM grade(s)[2] 5.0 ECTS 3.0

The module gives an introduction into fundamental knowledge of innovation and change management, as well as to their importance for the company's success in terms of innovation and change. It shows how and where innovation is created, which steps have to be passed through for realization as well as which methods in each phase can be applied, how the implementation can be controlled with appropriate controlling instruments and how innovations can be protected. Furthermore central approaches of change management are covered.
language: English

---

module **Machine Learing**

type of module [1] FTP grade(s)[2] 4.5 ECTS 3.0

Machine learning (ML) emerged out of artificial intelligence and computer science as the academic discipline concerned with "giving computers the ability to learn without being explicitly programmed" (A. Samuel, 1959). Today, it is the methodological driver behind the mega-trend of digitalization. ML experts are highly sought after in industry and academia alike. This course builds upon basic knowledge in math, programming and analytics/statistics as is typically gained in respective undergraduate courses of diverse engineering disciplines. From there, it teaches the foundations of modern machine learning techniques in a way that focuses on practical applicability to real-world problems. The complete process of building a learning system is considered: formulating the task at hand as a learning problem; extracting useful features from the available data; choosing and parameterizing a suitable learning algorithm. Covered topics include cross-cutting concerns like ML system design and debugging (how to get intuition into learned models and results) as well as feature engineering; covered algorithms include (amongst others) Support Vector Machines (SVM) and ensemble methods.
language: English

Spring semester 2021

module **Optimization**

type of module [1] FTP grade(s)[2] 5.0 ECTS 3.0

The module provides an introduction to the optimization. While it focuses on basic solution methods and the mathematical algorithms. The optimization includes the use of tools and mathematical methods for problems of decision-making. On this basis, a variety of quantitative questions from practice can be modeled and solved. Optimization tasks occure, for example, in the production, the distribution, in the development of telecommunications networks and in transport planning.
language: English

---

module **Theoretical Computer Science**

type of module [1] FTP grade(s)[2] 4.0 ECTS 3.0

This module aims at the strengthening of some basic theoretical aspects of computer science. The master students will learn that: formal languages and automation systems are essential concepts to describe different types of problems and calculations; Predictability/decidability are central to explain, that there many problems seem to have an intuitive solution, although it can’t be resolved by algorithms; Complexity is concerned with the effort needed to solve a problem in space or time, and there are also many very practical problems, which, with a reasonable amount of time or place, unresolved.
language: English

---

module **Wireless Communications**

type of module [1] TSM grade(s)[2] 5.0 ECTS 3.0

The module starts with the basics of Bittransfer-and link-layer of advanced wireless communication systems. Then, the students learn about the definition or the functions of a selection from the todays most important wireless standards. The Bittransfer-and the media access control layer will form the focus.
language: English

Fall semester 2021

module **Specialization Project 1**

type of module [1] FV grade(s)[2] C ECTS 12.0

The students will learn in preparation for the master's thesis up-to-date knowledge, problem-solving methods to organize projects and to work in project teams, and also to guide them.
language: English

---

module **Specialization Project 2, Split Part 1**

type of module [1] FV grade(s)[2] A ECTS 9.0

Continuation of immersion module 1

language: English

Spring semester 2022

module **Master Thesis, Split Part 1**

type of module [1] FV grade(s)[2] A ECTS 15.0

The students are able to incorporate a scientific topic and to carry out an analysis of problems on a high scientific level. They are able to analyze the results and make conclusions.
language: English

---

module **Privacy and Law**

type of module [1] CM grade(s)[2] 5.0 ECTS 3.0

The module privacy and law sensitizes students to the threats of privacy in post-modern society and stimulates reflection on values in the historical and cultural context. They get an overview on legal aspects of non material goods such as data, copyright, trademark rights are, etc.
language: English

---

module **Specialization Project 2, Split Part 2**

type of module [1] FV grade(s)[2] A ECTS 9.0

Continuation of immersion module 1

language: English

---

module **Sustainable Development**

type of module [1] CM grade(s)[2] 5.0 ECTS 3.0

Sustainable development is essential for many parts of modern society. This module provides an overview of the history of sustainable development, of established concepts, as well as of relevant initiatives and organisations globally and in Switzerland. Further, methodologies and tools are introduced for engineers to contribute to sustainable development on a technical level. Students learn the fields of application of the various methods as well as their strengths and weaknesses. They learn to apply the tools to analyze and improve the ecological performance of products and industrial processes.
language: English

Fall semester 2022

module **Master Thesis, Split Part 1**

type of module [1] FV grade(s)[2] A ECTS 15.0

The students are able to incorporate a scientific topic and to carry out an analysis of problems on a high scientific level. They are able to analyze the results and make conclusions.
language: English

Rotkreuz, 12 January 2023

Prof. Sarah Hauser
Head of Bachelor's & Master's Programmes

[1] Type of module:

CM = Context Module
FTP = Fundamental theoretical principles
TSM = Technical / scientific specialization (modules)
FV = Technical specialization with thesis

[2] grade(s):

A = excellent
B = very good
C = good
D = satisfactory
E = sufficient
F = fail

remitted = crediting of programs previously completed

[3] ECTS credits
1 ECTS credit corresponds to an average of 30 hours of work by the student. The ECTS credits are awarded for a module when the assessed assignment is completed with at least the grade of E.