POLITECNICO
MILANO 1863

DIPLOMA SUPPLEMENT ATTACHMENT

1	INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1	**Family name(s)**

FALCI

1.2	**Given name(s)**

ANGELO

1.3	**Date of birth (day/month/year)**

23/08/1994

1.4	**Student identification number or code (if available)**

875123

2	INFORMATION IDENTIFYING THE QUALIFICATION

2.1	**Name of the qualification and (if applicable) title conferred (in original language)**

Laurea magistrale in COMPUTER SCIENCE AND ENGINEERING - INGEGNERIA INFORMATICA
Dottore magistrale

2.2	**Main field(s) of study for the qualification**

LM-32 Computer systems engineering

2.3	**Name and status of awarding institution (in original language)**

Politecnico di Milano (Università statale), Piazza Leonardo da Vinci 32, 20133 Milano

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DIPLOMA SUPPLEMENT ATTACHMENT

Description of curriculum

ARTIFICIAL INTELLIGENCE

Code: 089214
Credits: 5.00
Grade: 29
Date: 03/02/2017

Subject groups
ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme
Introduction to AI. State space and related problem solving methods. Logic and reasoning. Automatic plan formation. Foundations and some critical concepts and philosophical problems of AI.

DATA BASES 2

Code: 089183
Credits: 5.00
Grade: 24
Date: 09/02/2017

Subject groups
ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme
The course aims to prepare software designers on the effective development of database applications. First, the course presents the fundamental features of current database architectures, with a specific emphasis on the concept of transaction and its realization in centralized and distributed systems. Then, the course illustrates the main directions in the evolution of database systems, presenting approaches that go beyond the relational model, like active databases, object systems and XML data management solutions.

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DIPLOMA SUPPLEMENT		Document ID	179973/4
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		Numero registro	1018-0023

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SOFTWARE ENGINEERING 2

Code:	089184
Credits:	5.00
Grade:	27
Date:	13/02/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

The software process and software standards; lifecycles (waterfall, prototype-based, evolutionary/incremental, spiral, agile); standards (ISO2001, SPICE, CMM); software business models, licensing, intellectual properties, open-source software. Requirements engineering. Software technologies: middleware, componenti models (J2EE and .NET). Design patterns. Software architectures and architectural styles. Methods and notations for specification: FSMs, StateCharts, Petri nets, temporal logics, Alloy. Verification and validation: testing and analysis, model checking.

FOUNDATIONS OF OPERATIONS RESEARCH

Code:	088983
Credits:	5.00
Grade:	26
Date:	20/02/2017

Subject groups

MAT/09 OPERATIONS RESEARCH

The programme

The course aims at providing the students with the modeling skills and methodological tools that are needed to model and solve a wide range of decision making problems arising in computer science and in other closely related fields. The main topics include: graph and network optimization, linear programming and integer programming.

FORMAL LANGUAGES AND COMPILERS

Code:	089182
Credits:	5.00
Grade:	23
Date:	21/02/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Theorerical concepts and algorithms for language definition and compiler design. Regular expressions, finite automata, and convertion from one model to the other. Context free grammars, ambiguity, structural adequacy. Linguistic abstraction. Syntax directed transaltion, attribute grammars, and semantic analysis. Principles of dat flow analysis for programs.

DIPLOMA SUPPLEMENT ATTACHMENT

ROBOTICS AND DESIGN

Code:	093217
Credits:	5.00
Grade:	30
Date:	27/06/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

This course aims to provide an overview and insight into the many categories of robot technology, as well as closely related fields, such as physical computing and human-computer interaction. Through the collaboration between teachers and students coming from Information Engineering School and Design School, this course is aimed at developing interdisciplinary competences to design interactive devices such as autonomous robots. Students will research, experiment with, design and produce robots. The course will conclude with a presentation of the final works.

COMPUTER SECURITY

Code:	089165
Credits:	5.00
Grade:	23
Date:	03/07/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

This course introduces the key topics in information and computer security, both in the network security and application security areas. The main techniques of information security engineering and the solutions to realize secure computing systems will be shown. The course mixes theory and practice with case study analysis.

FORMAL METHODS FOR CONCURRENT AND REAL-TIME SYSTEMS

Code:	088882
Credits:	5.00
Grade:	24
Date:	12/07/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

The goal of the course is to stimulate the ability of analyzing, designing and verifying critical systems (with particular emphasis on real-time aspects), by exploiting formal methods. The main topics are: Hoare's method for program specification and verification; specification languages for real-time systems; case studies based on industrial projects.

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DIPLOMA SUPPLEMENT ATTACHMENT

COMPUTING INFRASTRUCTURES

Code: 095898
Credits: 5.00
Grade: 21
Date: 17/07/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Data center infrastructures has made impressive transformations with the recent advent of web-based services and distributed systems. New architectures, such as cloud computing, have recently been recently proposed for approaching the challenging problems related to the requirements of the actual enterprise infrastructures that must be very powerful, highly available, scalable, well performing, green, open and secure at the same time. The course covers the basics of the actual data center architectures, ranging from the analysis of the single components to the global infrastructure. (Course held in english)

ADVANCED COMPUTER ARCHITECTURES

Code: 088949
Credits: 5.00
Grade: 21
Date: 18/07/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Objective of the course is that the student will understand all the major concepts used in modern microprocessors by the end of the semester. The course will cover the different forms of parallelism found in applications (instruction-level, data-level, thread-level, gate-level) and how these can be exploited with various architectural features. It will cover pipelining, superscalar, speculative and out-of-order execution, vector machines, VLIW machines, multithreading, graphics processing units, and parallel microprocessors. Final goal is to show how the software interacts with the hardware to provide performance and how trends ion technology, application and economics have driven and drive continuing changes in the field.

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DIPLOMA SUPPLEMENT ATTACHMENT

MODEL IDENTIFICATION AND DATA ANALYSIS

Code:	089234
Credits:	10.00
Grade:	22
Date:	19/07/2017

Subject groups

ING-INF/04 SYSTEMS AND CONTROL ENGINEERING

The programme

In the models used in Engineering and Science, one often encounters uncertain elements. The aim of this course is to present the methods which can be used to estimate uncertain parameters and predict un-measurable signals from experimental data. Both batch and recursive methods are introduced. More precisely, we present very powerful identification techniques for the estimation of dynamical models in input-output description (Least Squares, Maximum Likelihood, etc), and for the estimation of the matrices of state space models via the Hankel matrix. Furthermore, we discuss the Kalman filter, a virtual sensor enabling the tracking of unmeasurable signal, which plays a major role in contemporary engineering. Real time identification techniques are also extremely useful to work out self-tuning predictors and governors, and the issue of adaptive systems is also touched upon. The application of the id methods to simple prediction and control problem is discussed with the contribution of scholars from industry and research centers.

SOFT COMPUTING

Code:	089216
Credits:	5.00
Grade:	20
Date:	26/07/2017

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

What is "Soft Computing": fuzzy systems, Neural networks, stochastic algorithms - Fuzzy models: fuzzy sets, fuzzy logic, fuzzy rules. What can be represented by a fuzzy model and why. - Neural networks: basic principles, supervised and unsupervised learning, the main models, selection and evaluation criteria. Stochastic algorithms: basic principles, model optimization, fitness function, model definition, genetic algorithms, reinforcement learning. Hybrid models: motivations, neuro-fuzzy systems, genetic algorithms to optimize neural networks and fuzzy systems. Applications of Soft computing techniques: motivations, design choices, models case studies.

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AUTONOMOUS AGENTS AND MULTIAGENT SYSTEMS

Code:	089169
Credits:	5.00
Grade:	26
Date:	15/01/2018

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

The increasing distribution and interconnection of computer systems push toward the development of systems composed of autonomous entities, called agents, that interact together. The systems based on agents are used in several fields: from e-commerce to manufacturing process control, ambient intelligence, grid computing, and robotics. This course aims at presenting general techniques, independent from the specific application field, to design multiagent systems. In particular, the course illustrates methods for designing single agents able to take rational decisions under uncertainty and for designing systems composed of many agents, with attention to communication and interaction between the agents. The course shows also some development tools for implementing agent-based software systems. At the end of the course, the students will acquire the ability to design and develop distributed systems based on the agent paradigm.

VIDEOGAME DESIGN AND PROGRAMMING

Code:	089175
Credits:	5.00
Grade:	27
Date:	16/01/2018

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Unavailable

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DIPLOMA SUPPLEMENT ATTACHMENT

DESIGN AND IMPLEMENTATION OF MOBILE APPLICATIONS

Code:	093212
Credits:	5.00
Grade:	28
Date:	26/01/2018

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Il corso si propone di presentare le principali tecniche e tecnologie per la progettazione e la realizzazione di applicazioni per dispositivi mobili (smatphone e tablet). Nello specifico, il corso affronta il problema della progettazione di applicazioni "mobili" sia studiando la realizzazione della user experience, ovvero la progettazione delle schermate per interagire con l'utente, sia affrontando il problema della distribuzione dell'applicazione e dell'interazione con componenti e servizi esterni.

ADVANCED USER INTERFACES

Code:	097685
Credits:	5.00
Grade:	28
Date:	01/02/2018

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Building advanced user interfaces that effectively meet the users' needs is a complex task. It is necessary to master design and evaluation processes that are far more complex than in more conventional interfaces. This module provides the needed background on Human Computer Interaction general methodologies. Students will learn how to design, develop, and evaluate advanced user interfaces from a user experiences perspective.

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DIPLOMA SUPPLEMENT ATTACHMENT

RECOMMENDER SYSTEMS

Code:	097686
Credits:	5.00
Grade:	30 cum laude
Date:	13/02/2018

Subject groups

ING-INF/05 INFORMATION PROCESSING SYSTEMS

The programme

Recommender systems aim to support users in their decision-making while interacting with large information spaces. They recommend items of interest to users based on preferences they have expressed, either explicitly or implicitly. Recommender systems help overcome the information overload problem by exposing users to the most interesting items, and by offering novelty, surprise, and relevance. This course gave a tutorial about the leading approaches in recommender systems. The techniques described touch both collaborative and content-based approaches and include a number of algorithms that result in techniques. The course also explore alternative techniques of evaluating recommender systems.

SIGNALS AND SYSTEMS FOR COMMUNICATIONS

Code:	099322
Credits:	10.00
Grade:	28
Date:	26/06/2018

Subject groups

ING-INF/03 TELECOMMUNICATIONS

The programme

Continuous and discrete signals: the step and impulse signals, complex exponentials, elementary operations on signals. ; Continuous and discrete Linear Time-Invariant systems: the impulse response, convolution. ; Representation of signals in the frequency domain: Fourier transform of continuous-time signals, Fourier transform of sequences, Fourier series. ; From continuous to discrete time: the sampling theorem, energy and power of sampled signals, conversion to base-band by sampling, sampling in the frequency domain. ; The discrete Fourier transform (DFT): circularity in time and frequency, properties, practical applications. ; Continuous and discrete random processes: power spectral density, processes through LTI systems. ; Source coding: quantization, binary coding, Hufman coding, Entropy of the source. ; Digital transmission in base-band: PAM and PCM, interference between symbols, matched filter, probability error.

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DIPLOMA SUPPLEMENT ATTACHMENT

FINAL EXAMINATION

Code: 089254
Credits: 20.00
Grade: --
Date: 15/09/2018

Subject groups

Unavailable

The programme

Unavailable