



International Master (Initial training) - MR11601D

Artificial Intelligence for Connected Industries

Introduction

- Language of instruction: English.
- Mode of learning: daytime, full time, on-site and remote classes.
- Length: M1: 1 year, M2: 1 year, M1+M2: 2 years.
- Official title appearing in the degree: "Master Sciences, technologies, santé - mention Informatique", meaning Master of Science, Technologies and Health - track in Computer Science.
- French Ministry habilitation: Arrêté du 28 janvier 2019, Ministère de l'Enseignement Supérieur, de la Recherche et de l'Innovation.
- Master website: ai4ci.roc.cnam.fr

Program's presentation

The Master program takes place at Conservatoire national des arts et métiers (Cnam), Paris downtown, France, in the heart of the Ville Lumière (the City of Light), Marais district, in a vibrant multi-cultural international and stimulating environment.

The Master program covers:

- advanced artificial intelligence technologies applied to networked systems and robotics;
- advanced technologies related to the design IoT computing systems, protocols and applications;
- novel network architectures emerging with network virtualization (NFV), edge computing (MEC) and softwarization (SDN, SD-x);
- modeling and performance evaluation of networks and computing systems, including 5G and beyond 5G systems;
- integration of artificial intelligence and novel decision-making frameworks for the operations and automation of communication networks and IoT Systems.

The Program's faculty body includes world-class academics and industry experts. They participate actively in various areas such as: international, European and national collaborative projects, industrial research projects (H2020, ANR), standardization and open-source bodies (ONF, IETF, ETSI) etc.

Lecturers are also active researchers and engineers, who contribute significantly with standards, open source projects, scientific articles and publications to the contents of the Master program.

Objectives and Skills Learned

The Master program is meant for students willing to become expert of digital infrastructure technologies, going from network and Internet/cloud infrastructures to edge computing and IoT systems and applications.

Students attending the Computer Networks and IoT Systems Master program will learn and experiment current and novel technologies underpinning the Internet infrastructure, related to Network Virtualization, Internet-of-Things (IoT) protocols and architectures, IoT device design, Artificial Intelligence and Machine Learning integration in network and embedded systems, Software-Defined-Networking, Cloud Networking, 5G and beyond-5G architectures – a set of novel technologies driving the digital society evolution.

Admission requirements

International, extra-European and European students willing to pursue a Master degree program in English, and possessing a Bachelor-level degree in one of following fields: Computer Science, Electronics, Computer Engineering, Electrical Engineering, Software Engineering, ICT Engineering. Admission is also possible at the M2 (2nd year level) if you can justify 4 years of university study in one of the fields mentioned above with equivalent M1 (1st year) courses.

Application:

- 2-page curriculum vitae (CV);
- copy of Bachelor degree, and Master degree (if any);
- transcripts of grades of all previous degrees;
- signed motivation letter indicating if asking admission at the M1 or M2 level, and asking for scholarship;
- English certificate equivalent to B1 for M1 (1st year), B2 for M2 (2nd year), according to the CEFRL (Common European Framework of Reference for Languages);
- coordinates (email, telephone, address) of two reference professors.

Students coming from outside the European Union have to apply via Campus France :

<https://www.campusfrance.org>

Online application is possible via the «Études en France» platform :

<https://pastel.diplomatie.gouv.fr/etudesenfrance>

More details on the application procedure:
ai4ci.roc.cnam.fr

Scholarships and travel grants
available based on excellence criteria.

First/second year program (M1/M2)

M1 Program			M2 Program		
Code	Course title	ECTS	Code	Course title	ECTS
USEEN6	Artificial Intelligence and Machine Learning for Connected Systems	6	USEET8	Reinforcement Learning	3
USEEN3	Operations Research	4	USEET9	Learning Robots	3
USEET3	Parallel and Distributed Systems	6	USEU1	Robot Operating Systems	3
USEEN2	Operating Systems and Computer Architecture	6	USEEN4	Network Virtualization and Automation	6
USEEK7	Network Security	6	USEEK8	Advanced Experimental Projects on Connected Systems	6
USEES2	Automatics	4	9 ECTS to choose:		
USEES3	Distributed and Federated Learning	5	USEEW1	Business Process Modeling	3
USEEJ8	Wireless Mobile Networks	6	USEEW2	Advanced Automation of Industrial Processes and Services	3
6 ECTS to choose:			USEEU4	Advanced Programming	9
USRS2H	Refresh in programming languages	3	USEEW3	Industrial Internet of Things	6
USEES5	Sustainable IoT Architectures	3	USEEU5	Algorithm Engineering and Data Structures	9
USEES6	Next Generation IEEE 802.11 standards	3	USEEN5	Embedded Systems: Applications and Cybersecurity	6
USEES7	Data Management and Digital Transformation in Industrial Process Automation	3	3 ECTS to choose:		
USEES8	Big Data Technologies for Connected Industries	3	USEEU6	Applied Artificial Intelligence	3
USEES9	Robot Predictive Maintenance	3	USEEU7	WiFi and 5G Convergence in 6G	3
USRS78	Advanced Python Programming	3	USEEU8	Smart Industry 4.0 Systems	3
USEET1	Integration of Virtual and Augmented Reality Technologies in Connected Industries	3	USEEU9	Green AI Computing for Connected Industries	3
11 ECTS to choose:			USEEV1	Communications for Precision Agriculture and Farming	3
USEES4	Intelligent Process and Factory Control	3	USEEV2	Applications of AI and Cyber-threat Management	3
USEET2	Complex Networks: Data Analysis and Network Science	4	USEEV3	Programming and Communication of a Robotic Arm	3
USEEJ7	Networks - Complements and Applications	6	USEEV4	AI4CI Activities: from research to business	3
USEEJ6	Network Architecture	6	USRS78	Advanced Python Programming	3
USEEN1	Computer Systems Modeling and Verification	6	USEEV5	FPGA Platforms: Programmable Embedded Systems	3
USEET4	Peer-to-Peer Systems and Blockchain	5	6 ECTS to choose:		
USEET5	Datacenter Design and Operations	5	USEEJ9	FLE - French as foreign language	6
USEEK2	Scientific Communication I	2	USEEK1	English	6
USEEK3	Contemporary Economic Issues	3	USEEU6	Applied Artificial Intelligence	3
USEET6	Seminars from the Industry	3	USEEU7	WiFi and 5G Convergence in 6G	3
USEET7	Ethics and Sovereignty of Digital Infrastructures	3	USEEU8	Smart Industry 4.0 Systems	3
			USEEU9	Green AI Computing for Connected Industries	3
			USEEV1	Communications for Precision Agriculture and Farming	3
			USEEV2	Applications of AI and Cyber-threat Management	3
			USEEV3	Programming and Communication of a Robotic Arm	3
			USEEV4	AI4CI Activities: from research to business	3
			USRS78	Advanced Python Programming	3
			USEEV5	FPGA Platforms: Programmable Embedded Systems	3
			UAEE2B	Master thesis - Internship	21

Calendar

- Registration: till end of June
- Visa: till end of July
- Arrival: till end of September
- Start of classes: October
- End of classes: June

Fees

- For extra-European students: 3770 € per year
- For European students : 243 € per year

Your employer or a sponsoring company can cover the registration fees.

Scholarships covering tuition fees and/or living expenses can be attributed to outstanding students.

Courses (examples)

- Internet routing architecture
- Internet of Things (IoT)
- IoT device system design
- Artificial Intelligence and Machine Learning
- Cybersecurity architectures
- Network security
- Wireless and mobile networks
- Network Functions Virtualization
- Network Automation
- Software Defined Networking
- 5G and 6G architectures

Career opportunities

- Computer Scientist
- Network engineer
- IoT engineer
- Computer Systems Engineer
- Internet Engineer
- Network Expert
- Embedded Systems Engineer
- Expert Consultant in Computer Networks and Systems

Corporate partners/employers (examples)

- Orange
- SFR
- OVH
- Nokia
- Thales
- Huawei Technologies France
- Ericsson
- SQUAD
- Gandi

Depuis décembre 2021, le Cnam est certifié Qualiopi pour l'ensemble des entités de formation de l'établissement public, et pour les quatre types d'actions couvertes par cette certification :

le cnam



La certification qualité a été délivrée au titre des catégories d'actions suivantes :
ACTIONS DE FORMATION
BILANS DE COMPÉTENCES
ACTIONS DE VALIDATION DES ACQUIS DE L'EXPERIENCE
ACTIONS DE FORMATION PAR APPRENTISSAGE



Helping students with disability:
handi.cnam.fr

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