FIELD OF STUDY

ENGINEERING SCIENCES

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

CAMPUS FRANCE

Artificial Intelligence

Artificial intelligence (AI) is a concept propounded by British mathematician Alan Turing in a 1950 article entitled 'The Imitation Game'. Today AI forms a continuum with Computer Science and Applied Mathematics, bringing together theories and techniques for the development of computer programs to perform actions habitually performed by human intelligence, including learning, reasoning, and memorization. Its fields of application are widening steadily in communication, finance, the Humanities, engineering, languages, medicine, transportation, and other disciplines.

Training in artificial intelligence rests on a foundation of programs and concentrations in mathematics, computer science, and engineering at the *Licence* (Bachelor) level. Two- and three-year programs are oriented towards maths, computer science, electronics, robotics, and other fields of study. The same fields are offered at the Master's level in a variety of concentrations and specializations, or in tracks in robotics and automation focused on various sectors. Data processing (including big data), the development of personalized medical treatments, automated translation of foreign languages, the identification of toxic contents over the Internet, and self-driving vehicles are examples of the specialties offered in professional training.

Under the national AI strategy unveiled in 2018, France quintupled its Master's-level program offerings. Programs include national Master's degrees taught in both French and English, institutional diplomas, and labeled certifications.

- **#1** European country for AI laboratories
- **€ 1.5** million for AI in 2018-2022
- **€ 781** million for a network of AI institutions and an AI training plan
- **€ 2.22** billion in public-private cofinancing for AI in 2023-2025
- **13,678** people trained annually in AI (3IA)
- **563** academic researchers in 3IA (2022)
- **454** doctoral candidates and post-docs receiving financial support for 3IA (2022)
- **502** specialized AI startups in 2021

Source: www.intelligence-artificielle.gouv.fr

International

France enjoys worldwide recognition in mathematics, with 81 research laboratories dedicated to the subject, the most in Europe. France is investing more than €2 billion in the second phase of its national AI strategy. The Fourth Future Investment Program aims at helping spread AI throughout the economy, with €329 million and € 700 million invested in training in the "France 2030" plan.

With the cooperation of several other countries (Australia, Germany, Italy, India, Japan, Mexico, New Zealand, the Republic of Korea, Singapore, Slovenia, United Kingdom, United States) and the European Union, France and Canada in 2020 launched the Global Partnership on Artificial Intelligence (GPAI). The initial themes to be explored by GPAI experts are responsible AI, data governance, the future of work, innovation, and commercialization. French efforts are led by INRIA and coordinated with Canada's center of expertise in Montreal.

AI4T (Artificial Intelligence For and by Teachers) is an EU Erasmus project involving five European countries: France, Ireland, Italy, Luxembourg, and Slovenia. Its goal is to advance the use of AI in education.

RELATED FIELDS

• Agriculture • Art • Aeronautics and Space • Biology • Biotechnologies • Communication • Computer Science • Culture • Defense • Education • Electronics • Engineering • Food • Humanities • Information • Languages • Mathematics • Marketing • Management • Nanosciences • Maritime • Medicine and Health • Digital Technologies • Robotics • Telecommunications • Transportation

SUBFIELDS

• Algorithms • Arithmetic • Artificial awareness • Artificial neurons • Artificial synapses • Artificial vision • Automated translation • Automatic identification • Automation • Big data • Blockchains • Brain • Business analytics • Chatbots • Cinema • Cognitive science • Complex systems • Computers • Computer programs • Conjectures • Conversational agents • Cybersecurity • Databases • Deep learning • Dermatology • Design • Digital Humanities • Digital models • Digital simulacra • Digital twins • Drones • Ecological and energy transition • Energy • Finance • Graffiti method • Graph theory • Health data • Human-machine interface • Intelligent systems • Language • Linguistics • Machine learning • Maintenance systems • Manufacturing • Mechanics • Medical imaging • Military applications • Modeling • Multi-agent systems • Neuromorphic circuits • Neuronal networks • Nudge • Ophthalmology • Patient • Photography • Pixels • Pneumology • Programming • Primitive calculus • Publishing • Radiology • Self-driving cars • Software • Spintronics • Statistics • Structural biology • Sustainable cities and regions • Video games • Virtual laboratory • Vocal assistants • Voice and visual recognition • Web

Useful links

- ActuIA: **www.actuia.com**
- AFIA (French association for artificial intelligence): **https://afia.asso.fr**
- Another Brain: **https://anotherbrain.ai**
- Artificial Intelligence Forum: **www.forum-intelligenceartificielle.fr**
- Artificial and Natural Intelligence Toulouse Institute (ANITI): **https://aniti.univ-toulouse.fr**
- Campus Cyber: **https://campuscyber.fr**
- Confiance ai: **www.confiance.ai**
- Dataquitaine: **www.dataquitaine.com**
- Data Science & Artificial Intelligence Day: **https://systematic-paris-region.org/evenement/dsai-day-6eme-edition**
- French national AI strategy: **www.intelligence-artificielle.gouv.fr**
- Global Partnership on Artificial Intelligence (GPIA): **https://gpai.ai/fr**
- Global Policy AI: **https://globalpolicy.ai/fr**
- Hub France IA: **www.hub-franceia.fr**
- Impact IA: **www.impact-ai.fr**
- Interdisciplinary Institute for Artificial Intelligence (3iA Côte d'Azur): **https://3ia.univ-cotedazur.eu**
- Multidisciplinary Institute in Artificial Intelligence (MIAI): **https://miai.univ-grenoble-alpes.fr**
- Pack IA Région Île-de-France: **www.packia.fr**
- Paris Artificial Intelligence Research Institute (PR[AI]RIE): **https://prairie-institute.fr**
- 3IA (French network of interdisciplinary institutes on artificial intelligence): **https://instituts-3ia.fr**

LEVEL Licence

LICENCE

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

The following concentrations at the *Licence* (Bachelor) level provide the fundamental knowledge necessary for further specialized study in AI:

- Applied mathematics and computer science for the humanities and social sciences;
- Computer science and informatics;
- Electronics, electrical energy, automation;
- Engineering;
- Mathematics;
- Physics;
- Sciences and technologies, AI track.

www.campusfrance.org > Students > Studying > Find your programme

LICENCE PROFESSIONNELLE (VOCATIONAL BA DEGREE)

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

Several available concentrations prepare students for AI: Process engineering (industry, environment, energy), Manufacturing (mechatronics, robotics), Computer science (systems, networks, software, web, database management), Logistics, maintenance and technology (industry, electronics, instrumentation, systems).
The BUT *(Bachelor Universitaire de Technologie)* also touches on AI in certain concentrations: Computer science; Electrical engineering and industrial informatics; Industrial engineering and maintenance; Statistics and Computerized decision-making

www.campusfrance.org > Students > Studying > Find your programme

BACHELOR OF SCIENCES AND ENGINEERING

BACHELOR LEVEL – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

Bachelor of Sciences and Computer Engineering – Artificial Intelligence:
https://rouen.cesi.fr/nouveau-bachelor-a-cesi-ecole-dingenieurs/

LEVEL Master

Artificial Intelligence

INSTITUTION'S DIPLOMA

1 YEAR OF HIGHER EDUCATION

MSc label awarded by the CGE: *Artificial Intelligence Applied to Society; Artificial Intelligence Systems; Big Data and Artificial Intelligence*
www.cge.asso.fr/formations-labellisees/liste-formation-msc

MASTER

NATIONAL DIPLOMA – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

A university Master with concentrations and tracks relevant to AI is available in several disciplines:

- **Economics:** track in statistics for evaluation and forecasting
- **Computer science:** tracks in big data; AI; applied AI; foundations and applications of AI; AI and automatic learning; AI and robotics; development, 3D, and AI; databases and AI; AI and data sciences; distributed AI; imaging and AI; AI and form recognition; AI and interactive media; computer methods applied to enterprise management, applied AI track
- **Computer engineering:** AI track; engineering of complex systems, track in microsystems, embedded instrumentation, robotics
- **Mathematics and applications:** AI track; tracks in automation and robotics for intelligent systems; mathematics for AI
- **Optics, image, vision, multimedia:** AI track, data and cyber-physical systems sciences
- **Cognitive sciences:** track in cognitive engineering, interaction, AI
- **Automatic language processing**

www.campusfrance.org > Students > Studying > Find your programme

Programs Taught in English: *Artificial Intelligence, sytems, data*
https://taughtie.campusfrance.org/tiesearch/#/catalog

A Master can also be earned in Schools of Engineering:

- **Automation, robotics:** tracks in intelligent systems in robotics; autonomous robotics and intelligent transport
- **Industrial engineering:** tracks in data and AI in industrial engineering; advanced engineering methods for industries of the future
- **Computer science:** tracks in development, 3D, and AI; AI; AI and automatic learning
- **Mechanics, materials and processes:** specialization in advanced systems and robotics

Programs Taught in English: *Advanced Robotics; Artificial Intelligence Applied to Society; Artificial Intelligence & Advanced Visual Computing Master*
https://taughtie.campusfrance.org/tiesearch/#/catalog

TITRE D'INGÉNIEUR DIPLÔMÉ (ENGINEERING DEGREE)

MASTER LEVEL – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

French engineering schools confer the professional title of graduate engineer accredited by CTI, the French commission on engineering degrees, with specializations in intelligent and sustainable systems and robotics and AI.
www.cti-commission.fr/accreditation

LEVEL

Beyond the Master level

MASTÈRE SPÉCIALISÉ® (MS)

INSTITUTION'S DIPLOMA – 1 YEAR OF HIGHER EDUCATION

MS programs that have earned the label of the *Conférence des Grandes Écoles* (CGE) include: *Advanced Master in Artificial Intelligence & Business Transformation*; Big Data; *Data Science*; Management and Analysis of Big Data; *Expert Big Data Engineer.*

- **www.cge.asso.fr/formations-labellisees/liste-formation-ms**
- **https://ressources.campusfrance.org/esr/diplomes/en/mastere_spe_en.pdf**

ECTS: European Credit Transfer System