REINVENT ENGINEERING

CENTRALE NANTES

Ingénieur grande école | graduate programme

2ND AND 3RD YEAR SPECIALISATION

COMPUTER SCIENCE FOR ARTIFICIAL INTELLIGENCE

[INFO-IA]

Artificial intelligence (AI) is one of today's major scientific challenges. Recent advances in statistical learning have led to significant breakthroughs in many economic and societal fields. But these advances only reveal their full potential when integrated into a larger ecosystem, which lies within the historical scientific field of "artificial intelligence".

The specialisation in Computer Science for Artificial Intelligence takes a broad approach to this disciplinary field, covering statistical learning but also game theory, logic programming, reinforcement learning, ethics, etc.

The specialisation is a computer science course, focusing on AI, algorithms, and their implementation in practice.

COURSE CONTENT

- Advanced programming in Python
- Advanced algorithmics
- Deep learning
- Sustainability, ethics and computing
- Quality, Design and Modelling
- Introduction to statistics and data science with Python
- Algorithmic Game Theory
- Probabilistic Modelling and Reinforcement Learning
- Project 1
- Parallelism and Model Checking
- Programming on Graphical Processor Units
- Graphs and algorithms
- Logic programming
- Project 2

EXAMPLES OF PAST PROJECTS

> Programming a Poker game with AI
> SVD Decomposition of very large matrices
> Identification of gene sets using logic programming
> Predicting the risk of kidney dysfunction in living donors
> Infrastructure for bird song recognition
> Predicting tidal range with machine learning
> Datascience and machine learning with online games data

INDUSTRY SECTORS

> Digital services companies
> Consulting firms
> Large industrial groups
> Small and medium-sized enterprises
> Banking, insurance
> Startups
> Research and development

EXAMPLES OF INTERNSHIPS

> IA-based computer vision to enhance image quality for laparoscopic surgery (CNRS)
> Neural network architecture enhancement for unsupervised learning with Deep Image Prior (INSERM)
> Design and development of mobile applications (BAM)
> Identification of vegetation surrounding electrical grids with machine learning (ENEDIS)
> Deep Learning Diffusion Models (Thalès)
> Data Engineer Natural Language Processing (Amadeus)
> Continuous learning of intelligent infrastructures to control road traffic (ALTEN)
> Big data AI database development (TOYOTA)

CAREER PROSPECTS

> Analysis, Design Software integration
> IT development
> Big Data/AI development
> Project Management, Project Management Assistance
> Data Science
> Teaching and research in computer science

TEACHING STAFF

HEAD OF SPECIALISATION:

Didier LIME

LECTURERS:

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