MSc
Artificial
Intelligence

"The MSc Artificial Intelligence has provided me with a solid grounding to make a career change from data analytics to AI. I found the course to be an excellent balance of theory and application, with project-based assessments enabling a level of exploration and creativity that is often missing in academic courses. Modules touch upon emerging techniques and issues within AI as well as covering core concepts, which I feel is beneficial for career-orientated students. Overall, the course was enjoyable, lectures engaging, and a great deal of support is provided for students. I'll look back on this year fondly as I start my journey into AI!"

Sarah, alumnus

"The MSc in Artificial Intelligence was an incredible learning experience that allowed me to build a complete knowledge about AI, starting from the foundations of the field to the most recent trends and techniques that are now shaping our modern society. The programme represents the perfect mix between theory and practice giving you the knowledge and tools to handle mathematical, ethical and practical aspects of the most recent AI-related fields. On top of this, you'll have the opportunity to interact and learn from an incredible team of lecturers and professors that will guide you throughout this learning experience."

Tommaso, alumnus

"This programme delivered precisely on my reasons for choosing it. The curriculum design is a perfect balance of just the right (high) standard of fundamental mathematics and advanced programming together with significant opportunities for implementing practical applications – all under the expert and nurturing support of a great teaching team. The interdisciplinary and broad approach made for a hugely stimulating, insightful and rounded take on artificial intelligence which has positioned students well to play their part in helping to shape the future of this growing field. In particular, the focus on explainable AI (XAI) is a unique differentiator of the MSc Artificial Intelligence at City, University of London."

Martin, alumnus

Artificial Intelligence Research Centre

The Artificial Intelligence Research Centre, CitAI, runs the MSc in Artificial Intelligence.

Highly motivated and professional staff designed this hands-on master envisioning it as a project-based endeavour in a collaborative learning environment where students learn theoretical and mathematical principles of Artificial Intelligence and advanced, ground-breaking deep learning AI methods.

The curriculum is a well-balanced program that includes object, face, emotion recognition and classification, sequence analysis, prediction and control, cognitive modelling, agents and multi-agent systems evaluation and AI creativity. Students are also introduced to AI's ethical and legal challenges and trained to critically investigate them and explore ways to make AI explainable and fair.

To apply, please visit the university site here.

The academics

Esther Mondragón
Programme Director

Laure Daviaud

Michaël Garcia-Ortiz

Daniel Chicharro

Alex Ter-Sarkisov

Atif Riaz

Jacob Howe

Eduardo Alonso

Taught Programme

Autumn Term (4 modules)

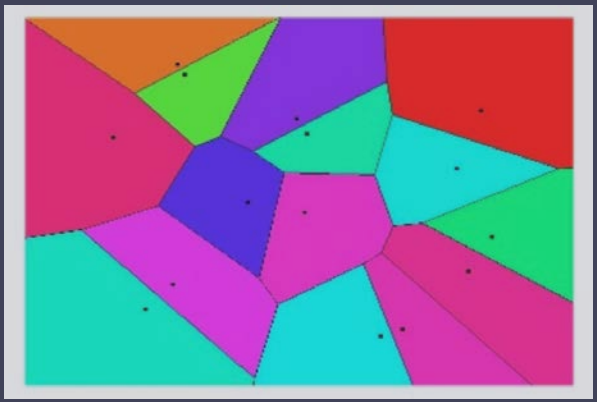
- Principles of AI
- Programming and Mathematics for AI
- Computational Cognitive Systems
- Agents and Multi-Agent Systems

Spring Term (4 modules)

- Deep Learning for Image Analysis
- Deep Learning for Sequence Analysis

- ❑ELECTIVE: Deep Reinforcement Learning
- ❑ELECTIVE: XAI: Ethical and legal challenges
- ❑ELECTIVE: Industrial Artificial Intelligence

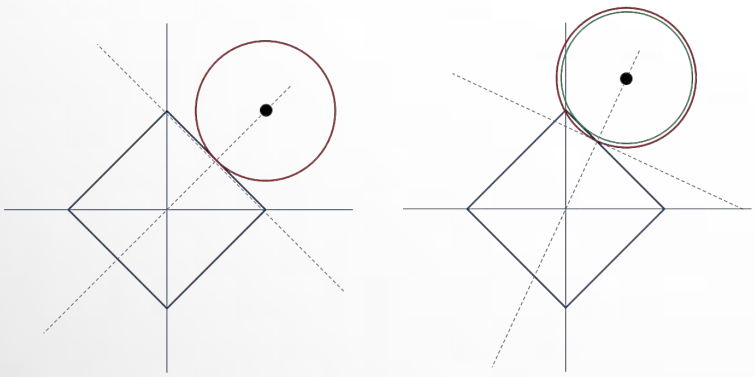
Principles of Artificial Intelligence

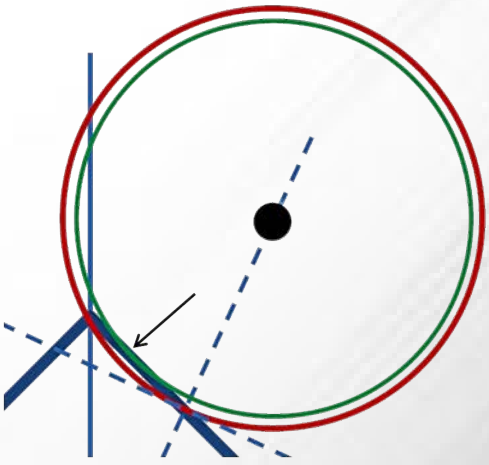


- Introduction and Perceptron
- Data, Decision Trees and performance measures
- Correlation, Regression and Support Vector Machines
- Unsupervised Learning: PCA and Clustering
- Classification: k-NN, Random Forest, Naïve Bayes
- Multi-layer Perceptron
- Convolutional Neural Networks
- Genetic Algorithms

Programming and Mathematics for AI

- Introduction and basic matrix operations
- Functions, variables, classes, and inheritance in Python
- Advanced Python: optimization and numerical Methods
- Linear regression
- Classification and logistic regression
- Neural Networks
- Regularisation and optimization
- Pytorch and Deep Learning
- Convolutional Neural Networks and Recurrent Neural Networks
- Advanced topics in Neural Network architectures



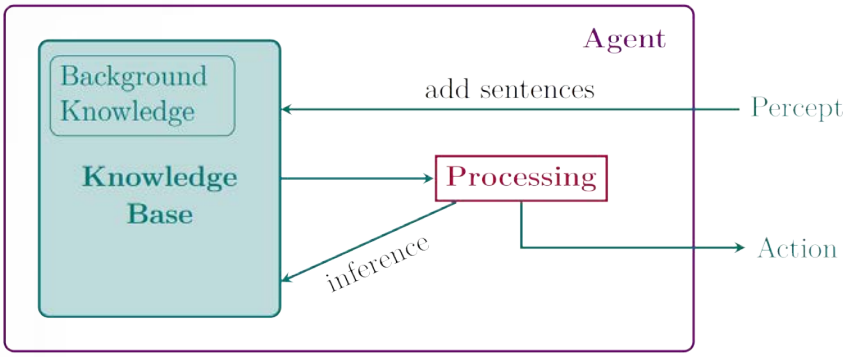


Computational Cognitive Systems

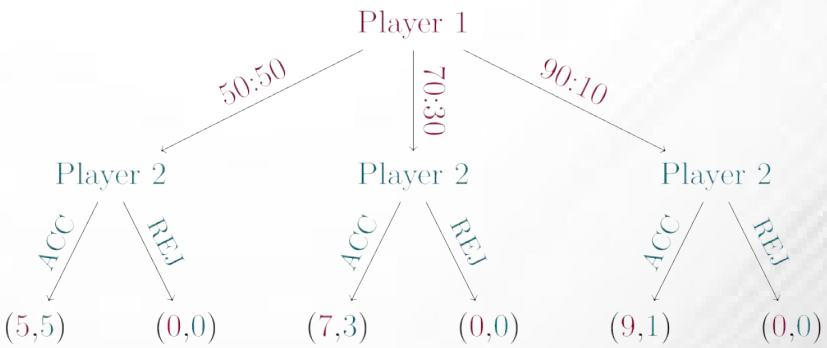
- Models and theories. Marrs' levels of analysis Computational Cognition and AI
- Computational theory and complexity
- Connectionist models, CTM. Dynamic models
- Bayesian models. Symbolic or declarative models
- Learning theory, mechanisms, structures and ANNs
- The Rescorla-Wagner and Temporal Difference models
- The problem of representation and attention in learning theory
- Fully connected learning models: SOP and DDA

(C) ArtsDot.com - Salvador Dali

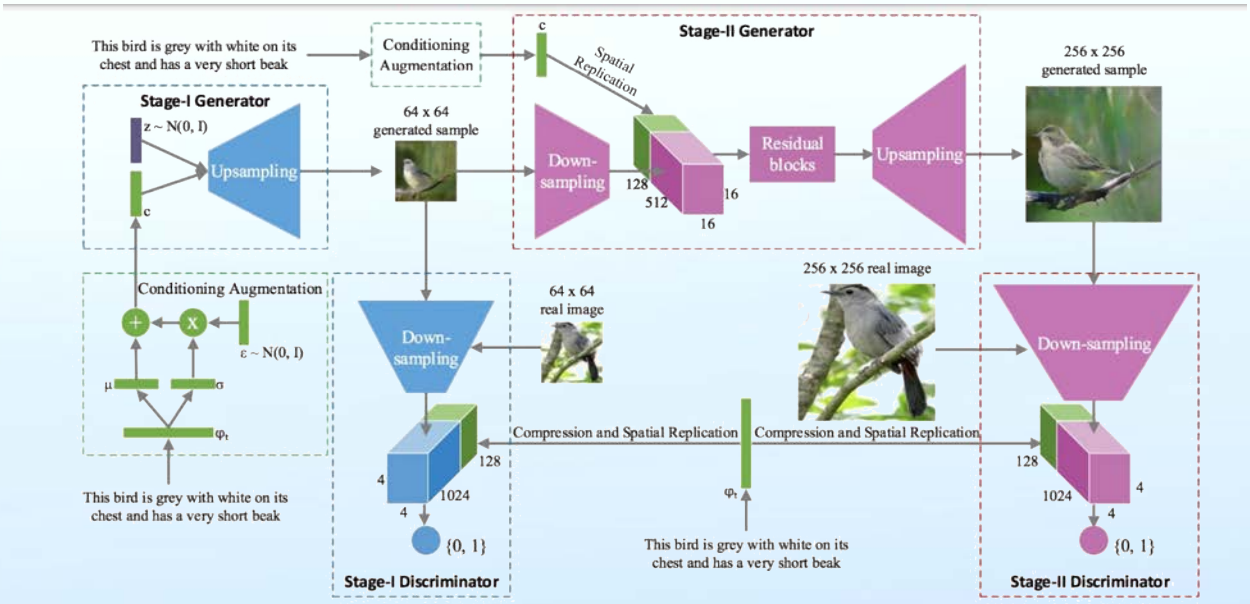
Agents and Multi-agents Systems



- Introduction
- Logical Agents
- Decision Theory
- Game Theory I
- Game Theory II
- Forming Coalitions
- Voting systems



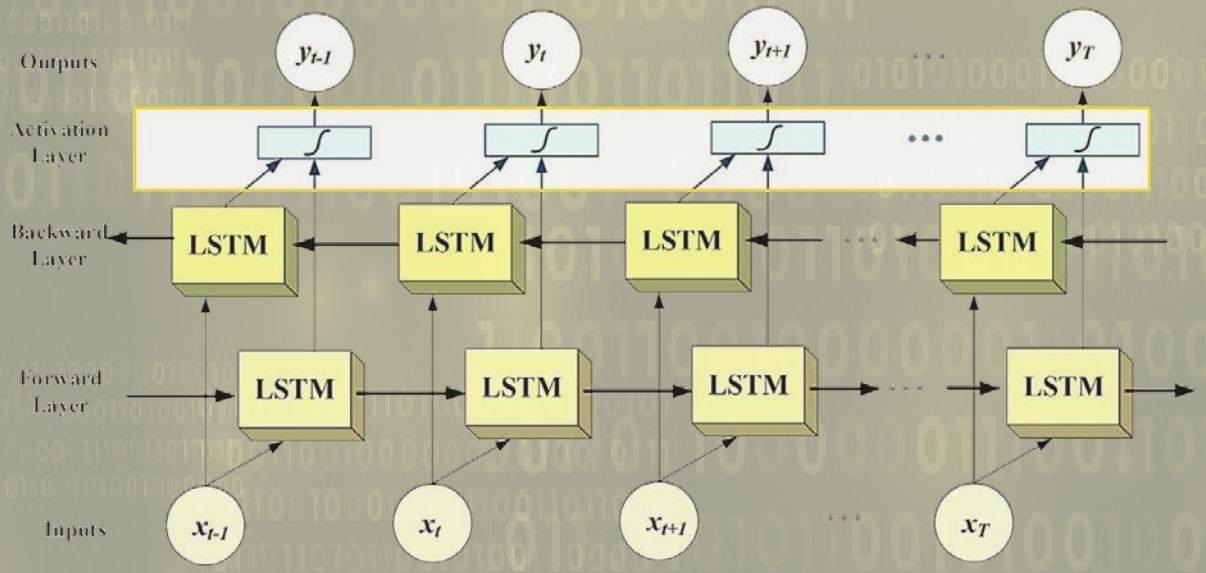
Deep Learning for Image Analysis



- Overview of image analysis and Multilayer Perceptron
- Introduction to Convolutional Neural Networks
- Training CovNets
- Object detection
- Segmentation
- GANs
- CapsNets
- Advanced topics

Deep Learning for Sequence Analysis

- Overview. Tools and data sets
- Language Models
- Neural Networks Language Models
- Recurrent Neural Networks
- Advanced RNNs
- ConvNets + RNNs
- Transformers
- BERTs and GPTs



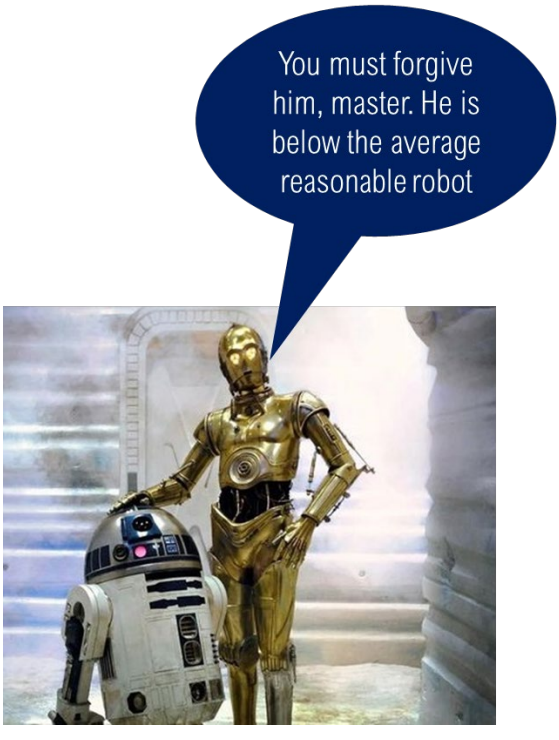
Source: https://persagen.com/

Deep Reinforcement Learning

- Introduction
- Markov Decisions Processes
- Q-Learning
- Temporal Difference
- Deep Q-Learning
- Rainbow Deep Q-Learning
- Policy Based Approaches
- Hybrid Approaches (SAC)

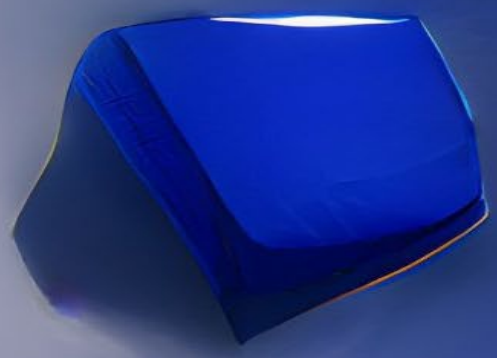
eXplainable AI:
Ethical & Legal Challenges

- Introduction to XAI. eXplainability and trust. Bias lab
- Ethical and legal agency. Agency lab
- Responsibility and liability for AI
- AI rights: The Hohfeldian Analytical System
- AI legal personality
- Controlling the creations
- Interpretability: interpretable models, model-agnostic methods
- Case studies: autonomous vehicles
- Cases studies: health care



Industrial Artificial Intelligence

- Introduction to the creative industries
- Runway ML
- Modern and Contemporary Art
- Artificial Intelligence Art
- Elevator Pitch
- Business Model Canvas
- Creating a Portfolio
- Intellectual Property
- NFTs



Master Thesis

The MSc degree comes to an end with a thesis.
This is a project that you must develop on your own, under the supervision of an academic expert.
You may also carry it out as a client project while doing an internship in a company.

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